

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

For draft Texas Pollutant Discharge Elimination System TPDES Permit No. WQ0000403000, EPA ID No. TX0004871 to discharge to water in the state.

Issuing Office: Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Applicant: Shell Oil Company and Deer Park Refining Limited Partnership
P.O. Box 100
Deer Park, Texas 77536-0100

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Date: June 9, 2015

Permit Action: Major Amendment; TPDES Permit No. WQ0000403000

I. EXECUTIVE DIRECTOR RECOMMENDATION

The Executive Director has made a preliminary decision that this permit, if issued, meets all statutory and regulatory requirements. It is proposed the permit be issued to expire on May 1, 2018 following the requirements of 30 Texas Administrative Code (TAC) §305.71.

II. APPLICANT ACTIVITY

The applicant currently operates the Shell Deer Park Refinery.

III. DISCHARGE LOCATION

As described in the application, the plant site is located at 5900 State Highway 225, south of the Houston Ship Channel, west of Patrick Bayou, and north of State Highway 225 at Center Street in the City of Deer Park, Harris County, Texas. Discharge is via Outfalls 001, 002, 003, 004, and 009 to Patrick Bayou Tidal portion of the Houston Ship Channel; via Outfalls 006 and 007 directly to the Houston Ship Channel Tidal; and via Outfall 008 to Boggy Bayou Tidal, thence to the Houston Ship Channel Tidal in Segment No. 1006 of the San Jacinto River Basin.

IV. RECEIVING STREAM USES

The designated uses for Segment No. 1006 are navigation and industrial water supply.

V. STREAM STANDARDS

The general criteria and numerical criteria that make up the stream standards are provided in 30 TAC §§307.1 - 307.10, effective July 22, 2010.

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VI. DISCHARGE DESCRIPTION

The following is a quantitative description of the discharge described in the Monthly Effluent Report data for the period of September 2008 through November 2013. The "Average of Daily Avg." values presented in the following table are the average of all daily average values for the reporting period for each parameter. The "Maximum of Daily Max." values presented in the following table are the individual maximum values for the reporting period for each parameter.

A. Flow

Outfall	Frequency	Average of Daily Avg	Maximum of Daily Max
001	Intermittent	0.064 MGD	6.5 MGD
002	Intermittent	0.125 MGD	0.43 MGD
003	Intermittent	1.01 MGD	10.19 MGD
004	Intermittent	0.38 MGD	3.5 MGD
006	Intermittent	0.46 MGD	2.58 MGD
007	Continuous	6.48 MGD	11 MGD
107	Continuous	0.052 MGD	0.2 MGD
008	Intermittent	3.56 MGD	20.7 MGD
108	Intermittent	8.20 MGD	22.8 MGD
009	Intermittent	0.85 MGD	3.1 MGD

B. Temperature

Outfall	Daily Avg	Daily Max
007	N/A	106 °F

C. Effluent Characteristics

Outfall	Parameter	Average of Daily Avg	Maximum of Daily Max
001	Total Organic Carbon	N/A	48 mg/L
	Oil and Grease	N/A	5 mg/L
	Copper, Total	0.0078 mg/L	0.051 mg/L
	pH	6.1 SU (min)	9.9 SU
002	Total Organic Carbon	N/A	19.9 mg/L
	Oil and Grease	N/A	6 mg/L
	Copper, Total	N/A	0.035 mg/L
	pH	6.9 SU (min)	8.9 SU
003	Total Organic Carbon	N/A	20.9 mg/L
	Oil and Grease	N/A	14 mg/L
	pH	6.7	9.5
004	Total Organic Carbon	N/A	31 mg/L
	Oil and Grease	N/A	9 mg/L
	Copper, Total	N/A	0.432 mg/L
	pH	6.7	8.9

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Outfall	Parameter	Average of Daily Avg	Maximum of Daily Max
006	Total Organic Carbon	N/A	26.94 mg/L
	Oil and Grease	N/A	5 mg/L
	pH	6.7 SU (min)	9.0 SU
007	Biochemical Oxygen Demand (5-day)	128 lbs/day	2016 lbs/day
	Total Suspended Solids	359.30 lbs/day	3023.63 lbs/day
	Total Organic Carbon	1086 lbs/day	3320 lbs/day
	Oil and Grease	283 lbs/day	1335 lbs/day
	Phenols	0.87 lbs/day	4.0 lbs/day
	Ammonia as Nitrogen	15.1 lbs/day	998 lbs/day
	Sulfides	3.19 lbs/day	55 lbs/day
	Chromium, Total	0.031 lbs/day	1 lbs/day
	Chromium, Hexavalent	0 lbs/day	0 lbs/day
	Enterococci	22.3 cfu/100 mls	104 cfu/100 mls
	Total Nitrogen	16.4 mg/L	32.3 mg/L
	Total Phosphorous	1.38 mg/L	2.38 mg/L
	Dioxin/Furans (TEQ)	N/A	20.905 ppq
	pH	5.7 SU (min)	10.3 SU
107	Enterococci	28.2 cfu/100 mls	48392 cfu/100 mls
008	Total Organic Carbon	N/A	40.8 mg/L
	Oil and Grease	N/A	10 mg/L
	pH	6.1 SU (min)	9.0 SU
108	Biochemical Oxygen Demand (5-day)	N/A	1745 lbs/day 17.8 mg/L
	Total Suspended Solids	N/A	11916 lbs/day 198 mg/L
	Total Organic Carbon	N/A	1998 lbs/day 20.9 mg/L
	Oil and Grease	N/A	753 lbs/day 7.68 mg/L
	Phenols	N/A	38 lbs/day 1.51 mg/L
	Ammonia as Nitrogen	N/A	155 lbs/day 1.45 mg/L
	Sulfides	N/A	34 lbs/day 0.348 mg/L
	Chromium, Total	N/A	0 lbs/day 0.01 mg/L
	Chromium, Hexavalent	N/A	1 lbs/day 0.01 mg/L
	pH	7.31 SU (min)	8.4 SU

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Outfall	Parameter	Average of Daily Avg	Maximum of Daily Max
009	Total Organic Carbon	N/A	22.4 mg/L
	Oil and Grease	N/A	9 mg/L
	Copper, Total	N/A	0.419 mg/L
	pH	6.9 SU (min)	8.9 SU

D. Effluent Limitation Exceedances

Outfall	Parameter	Months of Daily Avg	Months of Daily Max
001	pH	0	11
003	pH	0	1
007	Oil and Grease	0	1
	Total Suspended Solids	0	1
	Sulfides	0	2
	Temperature	0	1
108	Sulfides	1	0

The exceedances listed above do not demonstrate any recurring pattern of non-compliance that requires any specific action to be taken in the draft permit.

VII. DRAFT EFFLUENT LIMITATIONS

Final effluent limitations are established in the draft permit as follows:

Outfall	Parameter	Daily Average	Daily Maximum
001 (*1)	Flow	Report (MGD)	Report (MGD)
	Total Organic Carbon	N/A	70 mg/L
	Oil and Grease	N/A	15 mg/L
	Copper, Total	N/A	Report (mg/L)
	pH	6.0 SU (min)	9.0 SU
002	Flow	Report (MGD)	Report (MGD)
	Total Organic Carbon	N/A	70 mg/L
	Oil and Grease	N/A	15 mg/L
	Copper, Total	N/A	Report (mg/L)
	pH	6.0 SU (min)	9.0 SU
003	Flow	Report (MGD)	Report (MGD)
	Total Organic Carbon	N/A	70 mg/L
	Oil and Grease	N/A	15 mg/L
	pH	6.0 SU (min)	9.0 SU

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Outfall	Parameter	Daily Average	Daily Maximum
004	Flow	Report (MGD)	Report (MGD)
	Total Organic Carbon	N/A	70 mg/L
	Oil and Grease	N/A	15 mg/L
	Copper, Total	N/A	Report (mg/L)
	pH	6.0 SU (min)	9.0 SU
006	Flow	Report (MGD)	Report (MGD)
	Total Organic Carbon	N/A	70 mg/L
	Oil and Grease	N/A	15 mg/L
	pH	6.0 SU (min)	9.0 SU
007	Flow	9.25 MGD	14.0 MGD
	Temperature	N/A	105 ° F
	Biochemical Oxygen Demand (5-day)	1410 lbs/day	2820 lbs/day
	Total Suspended Solids	1980 lbs/day	2970 lbs/day
	Total Organic Carbon	3000 lbs/day	6000 lbs/day
	Oil and Grease	660 lbs/day	990 lbs/day
	Phenols	12 lbs/day	20 lbs/day
	Ammonia as Nitrogen	500 lbs/day	1580 lbs/day
	Sulfides	10 lbs/day	20 lbs/day
	Chromium, Total	22 lbs/day	44 lbs/day
	Chromium, Hexavalent	2.1 lbs/day	4.7 lbs/day
	Enterococci	Report (*2)	Report (*2)
	Total Nitrogen	Report (mg/L)	Report (mg/L)
	Total Phosphorous	Report (mg/L)	Report (mg/L)
	Dioxin/Furans (TEQ)	N/A	Report (ppq TEQ)
	Total Copper	3.33 lbs/day	7.06 lbs/day
	Total Nickel	0.59 lbs/day	1.39 lbs/day
	Acenaphthene	0.63 lbs/day	1.69 lbs/day
	Acenaphthylene	0.63 lbs/day	1.69 lbs/day
	Acrylonitrile	2.75 lbs/day	6.93 lbs/day
	Anthracene	0.63 lbs/day	1.69 lbs/day
	Benzene	1.06 lbs/day	3.89 lbs/day
	Benzo(a)anthracene	0.63 lbs/day	1.69 lbs/day
	Benzo(a)pyrene	0.66 lbs/day	1.75 lbs/day
	3,4-Benzofluoranthene	0.66 lbs/day	1.75 lbs/day
	Benzo(k)fluoranthene	0.63 lbs/day	1.69 lbs/day
	Bis(2-ethylhexyl)phthalate	2.95 lbs/day	7.99 lbs/day
	Carbon Tetrachloride	0.52 lbs/day	1.09 lbs/day
	Chlorobenzene	0.43 lbs/day	0.80 lbs/day
	Chloroethane	2.98 lbs/day	7.67 lbs/day
	Chloroform	0.60 lbs/day	1.32 lbs/day

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Outfall	Parameter	Daily Average	Daily Maximum
007 cont.	2-Chlorophenol	0.89 lbs/day	2.81 lbs/day
	Chrysene	0.63 lbs/day	1.69 lbs/day
	1,2-Dichlorobenzene	2.20 lbs/day	4.67 lbs/day
	1,3-Dichlorobenzene	0.89 lbs/day	1.26 lbs/day
	1,4-Dichlorobenzene	0.43 lbs/day	0.80 lbs/day
	1,1-Dichloroethane	0.63 lbs/day	1.69 lbs/day
	1,2-Dichloroethane	1.95 lbs/day	6.04 lbs/day
	1,1-Dichloroethylene	0.46 lbs/day	0.72 lbs/day
	1,2-trans Dichloroethylene	0.60 lbs/day	1.55 lbs/day
	2,4-Dichlorophenol	1.12 lbs/day	3.21 lbs/day
	1,2-Dichloropropane	4.38 lbs/day	6.58 lbs/day
	1,3-Dichloropropylene	0.83 lbs/day	1.26 lbs/day
	Diethyl phthalate	2.32 lbs/day	5.81 lbs/day
	2,4-Dimethylphenol	0.52 lbs/day	1.03 lbs/day
	Dimethyl phthalate	0.54 lbs/day	1.35 lbs/day
	Di-n-butyl phthalate	0.77 lbs/day	1.63 lbs/day
	4,6-Dinitro-o-cresol	2.23 lbs/day	7.93 lbs/day
	2,4-Dinitrophenol	2.03 lbs/day	3.52 lbs/day
	2,4-Dinitrotoluene	3.23 lbs/day	8.16 lbs/day
	2,6-Dinitrotoluene	7.30 lbs/day	18.35 lbs/day
	Ethylbenzene	0.92 lbs/day	3.09 lbs/day
	Fluoranthene	0.72 lbs/day	1.95 lbs/day
	Fluorene	0.63 lbs/day	1.69 lbs/day
	Hexachlorobenzene	0.0119 lbs/day	0.0251 lbs/day
	Hexachlorobutadiene	0.57 lbs/day	1.40 lbs/day
	Hexachloroethane	0.60 lbs/day	1.55 lbs/day
	Methyl Chloride	2.46 lbs/day	5.44 lbs/day
	Methylene Chloride	1.14 lbs/day	2.55 lbs/day
	Naphthalene	0.63 lbs/day	1.69 lbs/day
	Nitrobenzene	0.77 lbs/day	1.95 lbs/day
	2-Nitrophenol	1.17 lbs/day	1.98 lbs/day
	4-Nitrophenol	2.06 lbs/day	3.55 lbs/day
	Phenanthrene	0.63 lbs/day	1.69 lbs/day
	Phenol	0.43 lbs/day	0.74 lbs/day
	Pyrene	0.72 lbs/day	1.92 lbs/day
	Tetrachloroethylene	0.63 lbs/day	1.60 lbs/day
	Toluene	0.74 lbs/day	2.29 lbs/day
	1,2,4-Trichlorobenzene	1.95 lbs/day	4.01 lbs/day
	1,1,1-Trichloroethane	0.60 lbs/day	1.55 lbs/day
	1,1,2-Trichloroethane	0.60 lbs/day	1.55 lbs/day
	Trichloroethylene	0.60 lbs/day	1.55 lbs/day
	Vinyl Chloride	2.98 lbs/day	7.67 lbs/day

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Outfall	Parameter	Daily Average	Daily Maximum
007	pH	6.0 SU (min)	9.0 SU
107	Flow	Report (MGD)	Report (MGD)
	Enterococci	168 (*2)	500 (*2)
	Residual Chlorine	1.0 mg/L	N/A
207	Flow	Report (MGD)	Report (MGD)
008	Flow	Report (MGD)	Report (MGD)
	Total Organic Carbon	N/A	70 mg/L
	Oil and Grease	N/A	15 mg/L
	pH	6.0 SU (min)	9.0 SU
108	Flow	Report (MGD)	Report (MGD)
	Biochemical Oxygen Demand (5-day)	N/A	12,528 lbs/day 37 mg/L
	Total Suspended Solids	N/A	67,711 lbs/day 200 mg/L
	Total Organic Carbon	N/A	26,407 lbs/day 78 mg/L
	Oil and Grease	N/A	5,078 lbs/day 15 mg/L
	Phenols	N/A	88 lbs/day 0.26 mg/L
	Ammonia as Nitrogen	N/A	1,015 lbs/day 3 mg/L
	Sulfides	N/A	88 lbs/day 0.26 mg/L
	Chromium, Total	N/A	193 lbs/day 0.57 mg/L
	Chromium, Hexavalent	N/A	20 lbs/day 0.06 mg/L
	pH	6.0 SU (min)	9.0 SU
009	Flow	Report (MGD)	Report (MGD)
	Total Organic Carbon	N/A	70 mg/L
	Oil and Grease	N/A	15 mg/L
	Copper, Total	N/A	Report (mg/L)
	pH	6.0 SU (min)	9.0 SU

(*1) Effective from date of permit issuance and lasting until issuance of TPDES permit WQ0000402000.

(*2) Units are *colony forming units* (CFU) or *most probable number* (MPN) per 100 mls.

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VIII. SUMMARY OF CHANGES FROM APPLICATION

No changes were made from the application.

IX. SUMMARY OF CHANGES FROM EXISTING PERMIT

A. The permittee requested the following changes in its amendment request that the Executive Director has recommended granting.

1. Authorize the routing of wastewater from the North Effluent Treater (NET) plant to the South Effluent Treater (SET) plant when an upset condition at the NET occurs. The NET is the primary wastewater treatment system located onsite that generally treats wastewaters generated from petroleum refining activities and discharges the treated wastewaters via Outfall 007 of this permit. The SET is the primary wastewater treatment system located at the adjacent facility that generally treats wastewaters generated from organic chemical manufacturing activities and discharges the treated wastewaters via Outfalls 001, 101 or 004 of TPDES Permit No. WQ0000402000. Outfall 207 was established to monitor the flow of wastewater from the NET to the SET.
2. Authorize the discharge of wastewater diverted from the SET (when upset conditions at the SET occurs) via Outfall 007. Outfall 007 was modified to include effluent limitations and monitoring requirements for those parameters that are uniquely associated with the wastewaters from the SET and required by 40 CFR Part 414 Subpart I.
3. Remove Outfall 001 from the permit. The discharge of stormwater that is currently regulated via this outfall will be authorized and regulated via proposed Outfall 005 in TPDES Permit No. WQ0000402000. Outfall 001 remains in the draft permit as effective from date of permit issuance and lasting until issuance of TPDES permit WQ0000402000.
4. Authorize the return (i.e., discharge) of water used for testing firewater pumps directly to the Houston Ship Channel Tidal on an intermittent and flow-variable basis.

B. The following additional changes have been made to the draft permit.

1. Other Requirement No. 5 has been replaced. The former provision, which has been determined to be archaic and no longer necessary, has been replaced with a provision that documents the reporting schedule for pollutants that are monitored less than once per month.
2. Miscellaneous updates in formatting and standard language are included throughout the draft permit.

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X. DRAFT PERMIT RATIONALE

The following section sets forth the statutory and regulatory requirements considered in preparing the draft permit. Also set forth are any calculations or other necessary explanations of the derivation of specific effluent limitations and conditions, including a citation to the applicable effluent limitation guidelines and water quality standards.

A. REASON FOR PERMIT ISSUANCE

The applicant has applied to the Texas Commission on Environmental Quality (TCEQ) for a major amendment to Permit No. WQ0000403000 to authorize the routing of refinery plant wastewater to the South Effluent Treater (which is regulated under TPDES Permit No. WQ0000402000); authorize the discharge of chemical plant wastewater received from the adjacent facility via Outfall 007 on an intermittent basis; remove Outfall 001 from the permit; and authorize the return (i.e., discharge) of water used for testing firewater pumps directly to the Houston Ship Channel Tidal on an intermittent and flow-variable basis. The current permit authorizes the discharge of fire water and stormwater on an intermittent and flow-variable basis via Outfalls 001, 004, 006, and 009; non-process wastewater and stormwater on an intermittent and flow-variable basis via Outfalls 002 and 003; treated process, ballast, and utility wastewaters, groundwater, previously monitored effluents (treated domestic wastewater), landfill leachate, and stormwater via Outfall 007 at a daily average flow not to exceed 9,250,000 gallons per day via Outfall 007; and fire water, previously monitored effluents (contaminated runoff), and stormwater on an intermittent and flow-variable basis via Outfall 008.

The Executive Director has reviewed this action for consistency with the goals and policies of the Texas Coastal Management Program (CMP) in accordance with the regulations of the General Land Office (GLO) and has determined that the action is consistent with the applicable CMP goals and policies.

B. WATER QUALITY SUMMARY

The discharge route is via Outfalls 001, 002, 003, 004, and 009 to Patrick Bayou Tidal portion of the Houston Ship Channel; via Outfalls 006 and 007 directly to the Houston Ship Channel Tidal; and via Outfall 008 to Boggy Bayou Tidal, thence to the Houston Ship Channel Tidal, Segment No. 1006 of the San Jacinto River Basin. The designated uses for Segment No. 1006 are navigation and industrial water supply. Effluent limitations and conditions established in the draft permit are in compliance with state water quality standards and the applicable water quality management plan. The effluent limits in the draft permit will maintain and protect the existing instream uses. Additional discussion of the water quality aspects of the draft permit are in Section X.D. of this fact sheet.

In accordance with §307.5 and the TCEQ implementation procedures (June 2010) for the Texas Surface Water Quality Standards, an antidegradation review of the receiving waters was performed. A Tier 1 antidegradation review has preliminarily determined that existing water quality uses will not be impaired by this permit action. Numerical and narrative criteria to protect existing uses will be maintained. A Tier 2 review is not required since no exceptional, high, or intermediate aquatic life use water bodies have been identified in the discharge route. Existing uses will be maintained and protected.

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The preliminary determination can be reexamined and may be modified if new information is received.

The discharge from this permit action is not expected to have an effect on any federal endangered or threatened aquatic or aquatic-dependent species or proposed species or their critical habitat. This determination is based on the United States Fish and Wildlife Service's (USFWS) biological opinion on the State of Texas authorization of the Texas Pollutant Discharge Elimination System (TPDES; September 14, 1998; October 21, 1998 update). To make this determination for TPDES permits, TCEQ and EPA only considered aquatic or aquatic-dependent species occurring in watersheds of critical concern or high priority as listed in Appendix A of the USFWS biological opinion. The determination is subject to reevaluation due to subsequent updates or amendments to the biological opinion. The permit does not require EPA review with respect to the presence of endangered or threatened species.

Segment 1006 is currently listed on the State's inventory of impaired and threatened waters, the 2012 303(d) list. The listings are for bacteria in Goodyear Creek from the confluence with Greens Bayou Tidal to Granada St. in Harris County (AU 1006_05); dioxin in edible tissue and PCBs in edible tissue Houston Ship Channel Tidal from the Greens Bayou confluence to the Patrick Bayou confluence (AU 1006_01), Houston Ship Channel Tidal from the Patrick Bayou confluence to the Houston Ship Channel/San Jacinto River Tidal (1005) confluence (AU 1006_02), Greens Bayou Tidal from the Houston Ship Channel confluence to a point 0.7 km (0.4 miles) upstream of the Halls Bayou confluence (AU 1006_03), Patrick Bayou Tidal from the confluence with the Houston Ship Channel to 100 m (328 ft) upstream of the railroad bridge (AU 1006_04), Goodyear Creek from the confluence with Greens Bayou Tidal to Granada St. in Harris County (AU 1006_05), Tucker Bayou from the Houston Ship Channel confluence to a point 2.7 km (1.7 mi) upstream (AU 1006_06) and Carpenters Bayou from the Houston Ship Channel confluence to the lower boundary of 1006B (2.3 m/ 1.4 mi) upstream from the Houston Ship Channel confluence (AU 1006_07); and mercury in water and toxicity in sediment Patrick Bayou Tidal from the confluence with the Houston Ship Channel to 100 m (328 ft) upstream of the railroad bridge (AU 1006_04). The issuance of this permit is not anticipated to cause any additional adverse impact to the receiving waters with respect to the listed impairments. The draft permit continues effluent limitations for Enterococci bacteria which are consistent with applicable TCEQ rules (30 TAC 307); and no reasonable potential to exceed applicable water quality standards (30 TAC 307) for mercury, dioxins, PCBs, or toxicity has been demonstrated for any of the regulated discharges from this facility.

Segment 1006 is included in the agency's document *Fourteen Total Maximum Daily Loads for Nickel in the Houston Ship Channel System* (TMDL Project No.1). The discharge was screened using the methods outlined in the documents *Procedures to Implement the Texas Surface Water Quality Standards* (IPs), TCEQ June 2010 and *Implementation Plan for Dissolved Nickel in the Houston Ship Channel* (TMDL Implementation Plan), TCEQ, July 2001. The discharge authorized in this draft permit was considered during the development of the TMDL and included in the waste load allocation. The TMDL indicates that the water quality criteria for dissolved nickel are generally being met in the Houston Ship Channel and a specific limit for nickel is not recommended for this facility.

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A Waste Load Evaluation (WLE) has been prepared for Segment 1006. The discharge is included in the *Waste Load Evaluation WLE-1R for the Houston Ship Channel System*.

C. TECHNOLOGY-BASED EFFLUENT LIMITATIONS/CONDITIONS

1. GENERAL COMMENTS

Regulations promulgated in Title 40 of the Code of Federal Regulations (40 CFR) require technology-based limitations to be placed in wastewater discharge permits based on effluent limitations guidelines, where applicable, or on best professional judgment (BPJ) in the absence of guidelines.

The draft permit authorizes the discharge of fire water and stormwater on an intermittent and flow-variable basis via Outfalls 004, 006, and 009; non-process wastewater and stormwater on an intermittent and flow-variable basis via Outfalls 002 and 003; treated process wastewater, treated domestic wastewater, ballast wastewater, utility wastewater, groundwater, landfill leachate and stormwater at a daily average flow not to exceed 9.25 MGD via Outfall 007; firewater, stormwater, and previously monitored effluents (contaminated runoff monitored at internal Outfall 108) on an intermittent and flow-variable basis via Outfall 008; and water used for testing firewater pumps on an intermittent and flow-variable basis.

The discharge of treated refinery process wastewater, ballast wastewater, and stormwater via Outfall 007 from this facility is subject to federal effluent limitation guidelines at 40 CFR 419. The discharge of treated chemical plant wastewater via Outfall 007 from this facility is subject to federal effluent limitation guidelines at 40 CFR 414. A new source determination was performed and the discharge of treated process wastewater (from the refinery and the chemical plant), ballast wastewater, and stormwater is not a new source as defined at 40 CFR Section 122.2. Therefore new source performance standards (NSPS) are not required for this discharge.

The discharge of fire water and stormwater via Outfalls 001, 004, 006, and 009; non-process wastewater and stormwater via Outfalls 002 and 003; domestic wastewater, utility wastewater, groundwater, landfill leachate and stormwater (non-process area) via Outfall 007; firewater and stormwater via Outfall 008; and water used for testing firewater pumps is not subject to federal effluent limitation guidelines and any technology-based effluent limitations are based on best professional judgment.

The North Effluent Treater (NET) consists of primary treatment, secondary treatment, tertiary treatment, and pretreatment for benzene removal prior to the biological treatment unit. The primary treatment system consists of three corrugated plate interceptor (CPI) oil/water separators located adjacent to the NET, two CPI separators located at remote locations, one spill diversion sump with two tanks, on equalization sump with tank, and two dissolved air flotation (DAF) units. Secondary treatment is provided by the biological treatment system which consists of one trickling filter, two aeration basins, two secondary clarifiers, and a sludge handling system. Tertiary treatment is provided by a series of ten (10) sand filters operated in parallel. The benzene pretreatment system receives

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wastewaters from three headers (High Alkalinity Header, High Hardness Header, and the X-Street Header) and consists of two equalization/diversion tanks, two CPIs, two induced gas flotation (IGF) units, and a floatate treater system.

Sodium hypochlorite is used to disinfect the domestic wastewater prior to its commingling with process wastewaters. The NET normally receives wastewaters associated with the on-site refinery operations for treatment and discharge via Outfall 007.

The NET may also receive wastewaters associated with chemical plant operations that are generated at the adjacent facility and normally discharge via Outfall 004 of TPDES No. WQ0000402000.

Wastewaters normally routed to the NET may be diverted to the South Effluent Treater (SET) which is located at the adjacent facility and regulated in TPDES Permit No. WQ0000402000. Outfall 207 monitors the flow of effluent to the SET.

2. CALCULATIONS

See Appendix A of this fact sheet for calculations and further discussion of technology-based effluent limitations proposed in the draft permit.

Technology-based effluent limitations for total organic carbon, oil and grease, and pH at Outfalls 001, 002, 003, 004, 006, 008, and 009 are continued from the current permit based on EPA anti-backsliding regulations [40 CFR 122.44(l)].

Monitoring and reporting requirements for flow at Outfalls 001, 002, 003, 004, 006, 107, 008, and 108 are continued from the current permit based on EPA anti-backsliding regulations [40 CFR 122.44(l)].

Technology-based effluent limitations for biochemical oxygen demand (5-day), total suspended solids, total organic carbon, oil and grease, phenols, ammonia (as nitrogen), sulfides, total chromium, hexavalent chromium, and pH at Outfall 007 were derived from EPA categorical guidelines [40 CFR Part 419] for petroleum refineries and BPJ allocations for other non-process wastewater sources where appropriate. The limitations for these parameters are continued from the current permit based on EPA anti-backsliding regulations [40 CFR 122.44(l)].

Technology-based effluent limitations for total residual chlorine at Outfall 107 are based on TCEQ rules [30 TAC 309] and continued from the current permit based on EPA anti-backsliding regulations [40 CFR 122.44(l)].

Technology-based effluent limitations for acenaphthene; acenaphthylene; acrylonitrile; anthracene; benzene; benzo(a)anthracene; benzo(a)pyrene; 3,4-benzofluoranthene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; carbon tetrachloride; chlorobenzene; chloroethane; chloroform; 2-chlorophenol; chrysene; 1,2-dichlorobenzene; 1,3-dichlorobenzene; 1,4-dichlorobenzene; 1,1-dichloroethane; 1,2-dichloroethane; 1,1-dichloroethylene; 1,2-trans-dichloroethylene; 2,4-dichlorophenol; 1,2-dichloropropane; 1,3-dichloropropylene; diethyl phthalate; 2,4-dimethylphenol; dimethyl phthalate;

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di-n-butyl phthalate; 2,4-dinitrophenol; 4,6-dinitro-o-cresol; 2,4-dinitrotoluene; 2,6-dinitrotoluene; ethylbenzene; fluorene; fluoranthene; hexachlorobenzene; hexachlorobutadiene; hexachloroethane; methyl chloride; methylene chloride; naphthalene; nitrobenzene; 2-nitrophenol; 4-nitrophenol; phenanthrene; phenol; pyrene; tetrachloroethylene; toluene; 1,1,2-trichloroethane; 1,2,4-trichlorobenzene; 1,1,1-trichloroethane; trichloroethylene; and vinyl chloride at Outfall 007 were derived from EPA categorical guidelines [40 CFR Part 414, Subpart I] for organic chemical manufacturing facilities. The effluent limitations and monitoring requirements for these parameters are only applicable when the NET is receiving wastewater from the chemical manufacturing plant located at the adjacent facility.

Technology-based effluent limitations for biochemical oxygen demand (5-day), total suspended solids, total organic carbon, oil and grease, phenols, ammonia (as nitrogen), sulfides, total chromium, hexavalent chromium, and pH at Outfall 108 were derived from EPA categorical guidelines (40 CFR Part 419) for petroleum refineries and are continued from the current permit based on EPA anti-backsliding regulations [40 CFR 122.44(l)].

The following technology-based effluent limitations are proposed in the draft permit:

Outfall	Parameter	Daily Average	Daily Maximum
001 (*1)	Flow	Report (MGD)	Report (MGD)
	Total Organic Carbon	N/A	70 mg/L
	Oil and Grease	N/A	15 mg/L
	Copper, Total	N/A	Report (mg/L)
	pH	6.0 SU (min)	9.0 SU
002	Flow	Report (MGD)	Report (MGD)
	Total Organic Carbon	N/A	70 mg/L
	Oil and Grease	N/A	15 mg/L
	pH	6.0 SU (min)	9.0 SU
003	Flow	Report (MGD)	Report (MGD)
	Total Organic Carbon	N/A	70 mg/L
	Oil and Grease	N/A	15 mg/L
	pH	6.0 SU (min)	9.0 SU
004	Flow	Report (MGD)	Report (MGD)
	Total Organic Carbon	N/A	70 mg/L
	Oil and Grease	N/A	15 mg/L
	pH	6.0 SU (min)	9.0 SU
006	Flow	Report (MGD)	Report (MGD)
	Total Organic Carbon	N/A	70 mg/L
	Oil and Grease	N/A	15 mg/L
	pH	6.0 SU (min)	9.0 SU

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Outfall	Parameter	Daily Average	Daily Maximum
007	Flow	9.25 MGD	14.0 MGD
	Temperature	N/A	105 ° F
	Biochemical Oxygen Demand (5-day)	1410 lbs/day	2820 lbs/day
	Total Suspended Solids	1980 lbs/day	2970 lbs/day
	Total Organic Carbon	3000 lbs/day	6000 lbs/day
	Oil and Grease	660 lbs/day	990 lbs/day
	Phenols	12 lbs/day	20 lbs/day
	Ammonia as Nitrogen	500 lbs/day	1580 lbs/day
	Sulfides	10 lbs/day	20 lbs/day
	Chromium, Total	22 lbs/day	44 lbs/day
	Chromium, Hexavalent	2.1 lbs/day	4.7 lbs/day
	Total Nitrogen	Report (mg/L)	Report (mg/L)
	Total Phosphorous	Report (mg/L)	Report (mg/L)
	Total Nickel	0.59 lbs/day	1.39 lbs/day
	Acenaphthene	0.63 lbs/day	1.69 lbs/day
	Acenaphthylene	0.63 lbs/day	1.69 lbs/day
	Acrylonitrile	2.75 lbs/day	6.93 lbs/day
	Anthracene	0.63 lbs/day	1.69 lbs/day
	Benzene	1.06 lbs/day	3.89 lbs/day
	Benzo(a)anthracene	0.63 lbs/day	1.69 lbs/day
	Benzo(a)pyrene	0.66 lbs/day	1.75 lbs/day
	3,4-Benzofluoranthene	0.66 lbs/day	1.75 lbs/day
	Benzo(k)fluoranthene	0.63 lbs/day	1.69 lbs/day
	Bis(2-ethylhexyl) phthalate	2.95 lbs/day	7.99 lbs/day
	Carbon Tetrachloride	0.52 lbs/day	1.09 lbs/day
	Chlorobenzene	0.43 lbs/day	0.80 lbs/day
	Chloroethane	2.98 lbs/day	7.67 lbs/day
	Chloroform	0.60 lbs/day	1.32 lbs/day
	2-Chlorophenol	0.89 lbs/day	2.81 lbs/day
	Chrysene	0.63 lbs/day	1.69 lbs/day
	1,2-Dichlorobenzene	2.20 lbs/day	4.67 lbs/day
	1,3-Dichlorobenzene	0.89 lbs/day	1.26 lbs/day
	1,4-Dichlorobenzene	0.43 lbs/day	0.80 lbs/day
	1,1-Dichloroethane	0.63 lbs/day	1.69 lbs/day
	1,2-Dichloroethane	1.95 lbs/day	6.04 lbs/day
	1,1-Dichloroethylene	0.46 lbs/day	0.72 lbs/day
	1,2-trans Dichloroethylene	0.60 lbs/day	1.55 lbs/day
	2,4-Dichlorophenol	1.12 lbs/day	3.21 lbs/day
	1,2-Dichloropropane	4.38 lbs/day	6.58 lbs/day
	1,3-Dichloropropylene	0.83 lbs/day	1.26 lbs/day
	Diethyl phthalate	2.32 lbs/day	5.81 lbs/day
	2,4-Dimethylphenol	0.52 lbs/day	1.03 lbs/day
	Dimethyl phthalate	0.54 lbs/day	1.35 lbs/day

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Outfall	Parameter	Daily Average	Daily Maximum
007	Di-n-butyl phthalate	0.77 lbs/day	1.63 lbs/day
	4,6-Dinitro-o-cresol	2.23 lbs/day	7.93 lbs/day
	2,4-Dinitrophenol	2.03 lbs/day	3.52 lbs/day
	2,4-Dinitrotoluene	3.23 lbs/day	8.16 lbs/day
	2,6-Dinitrotoluene	7.30 lbs/day	18.35 lbs/day
	Ethylbenzene	0.92 lbs/day	3.09 lbs/day
	Fluoranthene	0.72 lbs/day	1.95 lbs/day
	Fluorene	0.63 lbs/day	1.69 lbs/day
	Hexachlorobutadiene	0.57 lbs/day	1.40 lbs/day
	Hexachloroethane	0.60 lbs/day	1.55 lbs/day
	Methyl Chloride	2.46 lbs/day	5.44 lbs/day
	Methylene Chloride	1.14 lbs/day	2.55 lbs/day
	Naphthalene	0.63 lbs/day	1.69 lbs/day
	Nitrobenzene	0.77 lbs/day	1.95 lbs/day
	2-Nitrophenol	1.17 lbs/day	1.98 lbs/day
	4-Nitrophenol	2.06 lbs/day	3.55 lbs/day
	Phenanthrene	0.63 lbs/day	1.69 lbs/day
	Phenol	0.43 lbs/day	0.74 lbs/day
	Pyrene	0.72 lbs/day	1.92 lbs/day
	Tetrachloroethylene	0.63 lbs/day	1.60 lbs/day
	Toluene	0.74 lbs/day	2.29 lbs/day
	1,2,4-Trichlorobenzene	1.95 lbs/day	4.01 lbs/day
	1,1,1-Trichloroethane	0.60 lbs/day	1.55 lbs/day
	1,1,2-Trichloroethane	0.60 lbs/day	1.55 lbs/day
	Trichloroethylene	0.60 lbs/day	1.55 lbs/day
	Vinyl Chloride	2.98 lbs/day	7.67 lbs/day
	pH	6.0 SU (min)	9.0 SU
107	Flow	Report (MGD)	Report (MGD)
	Residual Chlorine	1.0 mg/L	N/A
207	Flow	Report (MGD)	Report (MGD)
008	Flow	Report (MGD)	Report (MGD)
	Total Organic Carbon	N/A	70 mg/L
	Oil and Grease	N/A	15 mg/L
	pH	6.0 SU (min)	9.0 SU
108	Flow	Report (MGD)	Report (MGD)
	Biochemical Oxygen Demand (5-day)	N/A	12,528 lbs/day 37 mg/L
	Total Suspended Solids	N/A	67,711 lbs/day 200 mg/L
	Total Organic Carbon	N/A	26,407 lbs/day 78 mg/L

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Outfall	Parameter	Daily Average	Daily Maximum
108	Oil and Grease	N/A	5,078 lbs/day 15 mg/L
	Phenols	N/A	88 lbs/day 0.26 mg/L
	Ammonia as Nitrogen	N/A	1,015 lbs/day 3 mg/L
	Sulfides	N/A	88 lbs/day 0.26 mg/L
	Chromium, Total	N/A	193 lbs/day 0.57 mg/L
	Chromium, Hexavalent	N/A	20 lbs/day 0.06 mg/L
	pH	6.0 SU (min)	9.0 SU
009	Flow	Report (MGD)	Report (MGD)
	Total Organic Carbon	N/A	70 mg/L
	Oil and Grease	N/A	15 mg/L
	pH	6.0 SU (min)	9.0 SU

(*1) Effective from date of permit issuance and lasting until issuance of TPDES permit WQ0000402000.

D. WATER QUALITY-BASED EFFLUENT LIMITATIONS/CONDITIONS

1. GENERAL COMMENTS

The Texas Surface Water Quality Standards found at 30 TAC Chapter 307 state that “surface waters will not be toxic to man from ingestion of water, consumption of aquatic organisms, or contact with the skin, or to terrestrial or aquatic life.” The methodology outlined in the TCEQ guidance document *Procedures to Implement the Texas Surface Water Quality Standards (IP)* is designed to ensure compliance with 30 TAC Chapter 307. Specifically, the methodology is designed to insure that no source will be allowed to discharge any wastewater that: (1) results in instream aquatic toxicity; (2) causes a violation of an applicable narrative or numerical state water quality standard; (3) results in the endangerment of a drinking water supply; or (4) results in aquatic bioaccumulation that threatens human health. **Calculated water quality-based effluent limits can be found in Appendix B of this fact sheet.**

TPDES permits contain technology-based effluent limits reflecting the best controls available. Where these technology-based permit limits do not protect water quality or the designated uses, additional water quality-based effluent limitations or conditions are included. State narrative and numerical water quality standards are used in conjunction with EPA criteria and other toxicity databases to determine the adequacy of technology-based permit limits and the need for additional water quality-based controls. **A comparison of technology-based effluent limits and calculated water quality-based effluent limits can be found in Appendix C of this fact sheet.**

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2. AQUATIC LIFE CRITERIA

a. SCREENING

Water quality-based effluent limitations are calculated from marine aquatic life criteria found in Table 1 of the Texas Surface Water Quality Standards (30 TAC Chapter 307). Acute marine criteria are applied at the edge of the zone of initial dilution (ZID) and chronic marine criteria are applied at the edge of the aquatic life mixing zone.

i. OUTFALLS 001, 004, 006, 008, & 009

This application requests authorization to discharge predominantly stormwater on an intermittent and variable basis. Typically, critical conditions are not developed for predominantly stormwater outfalls.

ii. OUTFALL 002

The ZID for this discharge is defined as 7.5 feet from the point where the discharge enters the Houston Ship Channel Tidal. The aquatic life mixing zone for this discharge is defined as a radius of 30 feet from the point where the discharge enters the Houston Ship Channel Tidal.

TCEQ uses the EPA horizontal jet plume model to estimate dilution at the edges of the ZID and aquatic life mixing zone for discharges into sections of bays, estuaries, and wide tidal rivers that are less than 400 feet wide. General assumptions used in the horizontal jet plume model are: a non-buoyant discharge, a submersed pipe, and no cross flow. Based on this analysis, the following critical effluent percentages are calculated based on anticipated effluent flow of < 10 MGD:

Acute Effluent %	100%
Chronic Effluent %	50%

iii. OUTFALL 003

The ZID for this discharge is defined as 13.75 feet from the point where the discharge enters the Houston Ship Channel Tidal. The aquatic life mixing zone for this discharge is defined as a radius of 55 feet from the point where the discharge enters the Houston Ship Channel Tidal.

TCEQ uses the EPA horizontal jet plume model to estimate dilution at the edges of the ZID and aquatic life mixing zone for discharges into sections of bays, estuaries, and wide tidal rivers that are less than 400 feet wide. General assumptions used in the horizontal jet plume model are: a non-buoyant discharge, a submersed pipe, and no cross flow. Based on this analysis, the

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following critical effluent percentages are calculated based on anticipated effluent flow of < 10 MGD:

Acute Effluent %	100%
Chronic Effluent %	27%

iv. OUTFALL 007

The ZID for this discharge is defined as 50 feet from the point where the discharge enters the Houston Ship Channel Tidal. The aquatic life mixing zone for this discharge is defined as a radius of 200 feet from the point where the discharge enters the Houston Ship Channel Tidal.

TCEQ practice is to establish minimum estimated effluent percentages at the edges of the ZID and aquatic life mixing zone for discharges that are 10 MGD or less into bays, estuaries, or wide tidal rivers that are at least 400 feet wide. These critical effluent percentages are as follows:

Acute Effluent %	30%
Chronic Effluent %	8%

Wasteload allocations (WLAs) are calculated using the above estimated effluent percentages, criteria outlined in the Texas Surface Water Quality Standards, and partitioning coefficients for metals (when appropriate and designated in the implementation procedures). The WLA is the end-of-pipe effluent concentration that can be discharged when after mixing in the receiving stream, the instream numerical criteria will not be exceeded. From the WLA, a long-term average (LTA) is calculated using a lognormal probability distribution, a given coefficient of variation (0.6), and a 99th percentile confidence level. The lower of the two LTAs (acute and chronic) is used to calculate a daily average and daily maximum effluent limitation for the protection of aquatic life using the same statistical considerations with the 99th percentile confidence level and a standard number of monthly effluent samples collected (12). Assumptions used in deriving the effluent limitations include segment values for hardness, chloride, pH, and total suspended solids (TSS) according to the segment-specific values contained in the *IP*. The segment values are 412 mg/L CaCO₃ for hardness, 2090 mg/L for chloride, 7.2 standard units for pH, and 10 mg/L for TSS. For additional details on the calculation of water quality-based effluent limitations, refer to the *IP*.

TCEQ practice for determining significant potential is to compare the reported analytical data against percentages of the calculated daily average water quality-based effluent limitation. Permit limitations are required when analytical data reported in the application exceeds 85 percent of the calculated daily average water quality-based effluent limitation. Monitoring and reporting is required when analytical data reported in the application exceeds 70 percent of the calculated daily average water quality-based effluent limitation.

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b. PERMIT ACTION

Analytical data reported in the application was screened against calculated water quality-based effluent limitations for the protection of aquatic life.

Reported analytical data submitted in the application for cyanide at Outfall 007 exceeded 85 percent of the calculated daily average water quality-based effluent limitation for aquatic life protection. The data submitted in the application was for total cyanide and not free (amenable/available) cyanide, as required by TSWQS. The applicant conducted resampling and retests of the effluent for free (amenable/available) cyanide, which is the form that is regulated in the TSWQS. The retest results demonstrated no detectable levels of the analyte, no further action with respect to cyanide is required. Reported analytical data does not exceed 70 percent of the calculated daily average water quality-based effluent limitation for aquatic life protection for any other parameters.

Calculated water quality-based effluent limitations for total copper at Outfall 007 are more stringent than the required technology-based effluent limitations and are included in the draft permit.

The following effluent limitations and monitoring requirements are included in the draft permit for the protection of aquatic life.

Outfall	Parameter	Daily Average lbs/day	Daily Maximum lbs/day
007	Total Copper	3.33	7.06

3. AQUATIC ORGANISM TOXICITY CRITERIA (7-DAY CHRONIC)

a. SCREENING

The existing permit includes chronic freshwater biomonitoring requirements at Outfall 007.

In the past five years, the permittee performed twenty-nine chronic tests, with zero demonstration of significant toxicity (i.e., zero failures) by either test species.

Species	Date of Failure	Result (NOEC)	Endpoint
<i>Mysid shrimp</i>	n/a		
<i>Inland silverside</i>	n/a		

A reasonable potential determination was performed in accordance with 40 CFR §122.44(d)(1)(ii) to determine whether the discharge will reasonably be expected to cause or contribute to an exceedance of a state

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water quality standard or criterion within that standard. Each test species is evaluated separately. The RP determination is based on representative data from the previous five years of chronic WET testing. The table below identifies the thresholds for the number of failures required to necessitate that a WET limit be placed in the permit or the consideration of additional Best Professional Judgment (BPJ) factors, such as the duration and magnitude of the failures.

WET Reasonable Potential Determination Thresholds
More than 3 failures in the past five years = WET limit
3 failures with 2 or 3 occurring in the past 3 years = WET limit
1 to 3 failures in the past five years but 1 or less in last 3 years = BPJ
0 failures = No limit

With zero failures by either test species, a determination of no RP was made. With no RP, WET limits are not required and both test species are eligible for the testing frequency reduction.

All valid test data results were used for this determination.

Minimum chronic freshwater biomonitoring conditions required for EPA classified major facilities are proposed in the draft permit as outlined below.

b. PERMIT ACTION

The provisions of this section apply to Outfall 007.

Based on information contained in the permit application, the TCEQ has determined that there may be pollutants present in the effluent(s) that may have the potential to cause toxic conditions in the receiving stream. Whole effluent biomonitoring is the most direct measure of potential toxicity, which incorporates the effects of synergism of effluent components and receiving stream water quality characteristics. Biomonitoring of the effluent is, therefore, required as a condition of this permit to assess potential toxicity. The biomonitoring procedures stipulated as a condition of this permit are as follows:

- i) Chronic static renewal 7-day survival and growth test using the mysid shrimp (*Mysidopsis bahia*). The frequency of the testing shall be once per quarter.
- ii) Chronic static renewal 7-day larval survival and growth test using the inland silverside (*Menidia beryllina*). The frequency of the testing shall be once per quarter.

Toxicity tests shall be performed in accordance with protocols described in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, Third Edition* (EPA-821-R-02-014) or the latest revision. The stipulated test species are appropriate to measure the toxicity of the effluent consistent

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with the requirements of the state water quality standards. The biomonitoring frequency has been established to reflect the likelihood of ambient toxicity and to provide data representative of the toxic potential of the facility's discharge.

This permit may be reopened to require effluent limits, additional testing, or other appropriate actions to address toxicity if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream or water body.

If none of the first four consecutive quarterly tests demonstrates significant lethal or sub-lethal effects, the permittee may submit this information in writing and, upon approval, reduce the testing frequency to once per six months for the invertebrate test species and once per year for the vertebrate test species. If one or more of the first four consecutive quarterly tests demonstrates significant sub-lethal effects, the permittee shall continue quarterly testing for that species until four consecutive quarterly tests demonstrate no significant sub-lethal effects. At that time, the permittee may apply for the appropriate testing frequency reduction for that species. If one or more of the first four consecutive quarterly tests demonstrates significant lethal effects, the permittee shall continue quarterly testing for that species until the permit is reissued.

c. DILUTION SERIES

The permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests. These additional effluent concentrations shall be 3%, 5%, 6%, 8%, and 11%. The low-flow effluent concentration (critical dilution) is defined as 8% effluent.

The dilution series outlined above was calculated using a 0.75 factor applied to the critical dilution. The critical dilution is the estimated effluent dilution at the edge of the aquatic life mixing zone, which is calculated in section X.D.2.a. of this fact sheet.

4. AQUATIC ORGANISM TOXICITY CRITERIA (24-HOUR ACUTE)

a. SCREENING

The existing permit includes 24-hour acute freshwater biomonitoring language for Outfall 007.

In the past five years, the permittee has performed twenty 24-hour acute tests, with no demonstrations of significant mortality by either test species.

Minimum 24-hour acute freshwater biomonitoring requirements are proposed in the draft permit as outlined below.

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b. PERMIT ACTION

24-hour 100% acute biomonitoring tests are required at Outfall 007 at a frequency of once per six months for the life of the permit.

The biomonitoring procedures stipulated as a condition of this permit are as follows:

- i) Acute 24-hour static toxicity test using the mysid shrimp (*Mysidopsis bahia*). A minimum of five (5) replicates with eight (8) organisms per replicate shall be used for this test.
- ii) Acute 24-hour static toxicity test using the inland silverside (*Menidia beryllina*). A minimum of five (5) replicates with eight (8) organisms per replicate shall be used for this test.

Toxicity tests shall be performed in accordance with protocols described in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition*, (EPA-821-R-02-012) or the latest revision.

5. AQUATIC ORGANISM BIOACCUMULATION CRITERIA

a. SCREENING

Discharges protective of fish consumption

Water quality-based effluent limitations for the protection of human health are calculated using criteria for the consumption of fish tissue found in Table 2 of the Texas Surface Water Quality Standards (30 TAC Chapter 307). Fish tissue bioaccumulation criteria are applied at the edge of the human health mixing zone for discharges into bays, estuaries and wide tidal rivers.

i. OUTFALLS 001, 004, 006, 008, & 009

This application requests authorization to discharge predominantly stormwater on an intermittent and variable basis. Typically, critical conditions are not developed for predominantly stormwater outfalls.

ii. OUTFALL 002

The human health mixing zone for this discharge is defined as a 60-foot radius from the point where the discharge enters the Houston Ship Channel Tidal. TCEQ uses the EPA horizontal jet plume model to estimate dilution at the edge of the human health mixing zone for discharges into sections of bays, estuaries, or wide tidal rivers that are less than 400 feet wide. General assumptions used in the horizontal jet plume model are: a non-buoyant discharge, a submersed pipe, and no cross flow. Based on this analysis, the following critical effluent percentage is calculated based on the anticipated effluent flow of less than 10 MGD:

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Human Health Effluent %:	25%
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iii. OUTFALL 003

The human health mixing zone for this discharge is defined as a 110-foot radius from the point where the discharge enters the Houston Ship Channel Tidal. TCEQ uses the EPA horizontal jet plume model to estimate dilution at the edge of the human health mixing zone for discharges into sections of bays, estuaries, or wide tidal rivers that are less than 400 feet wide. General assumptions used in the horizontal jet plume model are: a non-buoyant discharge, a submersed pipe, and no cross flow. Based on this analysis, the following critical effluent percentage is calculated based on the anticipated effluent flow of less than 10 MGD:

Human Health Effluent %:	14%
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iv. OUTFALL 007

Water quality-based effluent limitations for the protection of human health are calculated using criteria for the consumption of fish tissue found in Table 2 of the Texas Surface Water Quality Standards (30 TAC Chapter 307). Fish tissue bioaccumulation criteria are applied at the edge of the human health mixing zone for discharges into bays, estuaries and wide tidal rivers. The human health mixing zone for this discharge is defined as a 400-foot radius from the point where the discharge enters the Houston Ship Channel Tidal. TCEQ practice is to establish a minimum estimated effluent percentage at the edge of the human health mixing zone for discharges that are 10 MGD or less into bays, estuaries, and wide tidal rivers that are at least 400 feet wide. This critical effluent percentage is:

Human Health Effluent %:	4%
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Water quality-based effluent limitations for human health protection against the consumption of fish tissue are calculated using the same procedure as outlined for calculation of water quality-based effluent limitations for aquatic life protection. A 99th percentile confidence level in the long-term average calculation is used with only one long-term average value being calculated.

Significant potential is again determined by comparing reported analytical data against 70 percent and 85 percent of the calculated daily average water quality-based effluent limitation.

b. PERMIT ACTION

No analytical data is available for screening against water quality-based effluent limitations since the facility is not in operation.

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Reported analytical data does not exceed 70 percent of the calculated daily average water quality-based effluent limitation for human health protection. Reported analytical data for no parameters exceed 70 percent of the calculated daily average water quality-based effluent limitation for human health protection (using consumption of fish tissue criteria).

The monitoring requirements for dioxin/furans contained in the existing permit are continued into the draft permit.

Calculated water quality-based effluent limitations for hexachlorobenzene at Outfall 007 are more stringent than the required technology-based effluent limitations and are included in the draft permit.

The following effluent limitations are included in the draft permit for the protection of human health protection (using consumption of fish tissue criteria).

Outfall	Parameter	Daily Average lbs/day	Daily Maximum lbs/day
007	Dioxin/Furans (TEQ)	N/A	Report (ppq TEQ)
	Hexachlorobenzene	0.0119	0.0251

6. DRINKING WATER SUPPLY PROTECTION

a. SCREENING

Water Quality Segment No. 1006, which receives the discharge(s) from this facility, is not designated as a public water supply. Screening reported analytical data against water quality-based effluent limitations calculated for the protection of a drinking water supply is not applicable.

b. PERMIT ACTION

None.

7. BACTERIA PROTECTION

a. SCREENING

Treated domestic wastewater is authorized to be discharged via internal Outfall 107 prior to discharge via final Outfall 007. Protection from exposure to human pathogens is required. Current agency policy is to impose appropriate effluent limitations for Enterococci for discharges of treated domestic wastewater directly to marine receiving waters or to freshwater bodies within three (3) miles of marine receiving waters.

b. PERMIT ACTION

The discharge from Outfall 107 (via final Outfall 007) is directly to marine receiving waters. Appropriate effluent limitations for Enterococci are

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imposed at internal Outfall 107 which is the closest monitoring point to treated domestic wastewater.

The criteria for Segment No. 1006 in 30 TAC 307 Appendix A is 168 #/100 mL. The draft permit continues the existing effluent limitations for Enterococci that are consistent with the segment criteria.

The following limitations are proposed in the draft permit for protection from human pathogens:

Outfall	Parameter	Daily Avg	Daily Max
107	Enterococci	168 (*1)	500 (*1)

(*1) Units are *colony forming units* (CFU) or *most probable number* (MPN) per 100 mls.

8. DISSOLVED OXYGEN PROTECTION

a. SCREENING

An analysis of the discharge at Outfall 007 was conducted using QUAL-TX modeling for an effluent flow of 9.25 MGD. The QUAL-TX model used for evaluating this discharge is described and documented in the *Waste Load Evaluation WLE-1R for the Houston Ship Channel System* (September 2006).

b. PERMIT ACTION

A summary of the QUAL-TX model conducted for this discharge is provided in the TCEQ IOM dated November 13, 2013.

Based on model results, the existing effluent set of 1410 lbs/day BOD₅ and 500 lbs/day ammonia nitrogen, modeled with 2 mg/L dissolved oxygen, is predicted to be adequate to maintain the dissolved oxygen level above the criterion for Houston Ship Channel Tidal (2.0 mg/L). The intermittent and variable discharges at outfalls 001, 002, 003, 004, 006, 008 and 009 are not expected to adversely affect the 2.0 mg/L DO criterion.

The following final effluent limitations and monitoring requirements are included in the draft permit for the protection of the dissolved oxygen criteria of the receiving waters.

Outfall	Parameter	Daily Avg	Daily Max
007	Biochemical Oxygen Demand (5-day)	1410 lbs/day	2820 lbs/day
	Ammonia (as Nitrogen)	500	1580

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XI. PRETREATMENT REQUIREMENTS

This facility is not defined as a publicly owned treatment works (POTW). Pretreatment requirements are not proposed in the draft permit.

XII. VARIANCE REQUESTS

No variance requests have been received.

XIII. PROCEDURES FOR FINAL DECISION

When an application is declared administratively complete, the Chief Clerk sends a letter to the applicant advising the applicant to publish the Notice of Receipt of Application and Intent to Obtain Permit in the newspaper. In addition, the Chief Clerk instructs the applicant to place a copy of the application in a public place for reviewing and copying in the county where the facility is or will be located. This application will be in a public place throughout the comment period. The Chief Clerk also mails this notice to any interested persons and, if required, to landowners identified in the permit application. This notice informs the public about the application, and provides that an interested person may file comments on the application or request a contested case hearing or a public meeting.

Once a draft permit is completed, it is sent, along with the Executive Director's preliminary decision, as contained in the technical summary or fact sheet, to the Chief Clerk. At that time, the Notice of Application and Preliminary Decision will be mailed to the same people and published in the same newspaper as the prior notice. This notice sets a deadline for making public comments. The applicant must place a copy of the Executive Director's preliminary decision and draft permit in the public place with the application.

Any interested person may request a public meeting on the application until the deadline for filing public comments. A public meeting is intended for the taking of public comment and is not a contested case proceeding.

After the public comment deadline, the Executive Director prepares a response to all significant public comments on the application or the draft permit raised during the public comment period. The Chief Clerk then mails the Executive Director's response to comments to people who have filed comments, requested a contested case hearing, or requested to be on the mailing list. This notice provides that if a person is not satisfied with the Executive Director's response and decision, they can request a contested case hearing or file a request to reconsider the Executive Director's decision within 30 days after the notice is mailed.

The Executive Director will issue the permit unless a written hearing request or request for reconsideration is filed within 30 days after the Executive Director's response to comments is mailed. If a hearing request or request for reconsideration is filed, the Executive Director will not issue the permit and will forward the application and request to the TCEQ Commissioners for their consideration at a scheduled Commission meeting. If a contested case hearing is held, it will be a legal proceeding similar to a civil trial in state district court.

If the Executive Director calls a public meeting or the Commission grants a contested case hearing as described above, the Commission will give notice of the date, time, and place of the meeting or hearing. If a hearing request or request for reconsideration is made, the Commission

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will consider all public comments in making its decision and shall either adopt the Executive Director's response to public comments or prepare its own response.

For additional information about this application contact Michael Sunderlin at (512) 239-4523.

XIV. ADMINISTRATIVE RECORD

The following section is a list of the fact sheet citations to applicable statutory or regulatory provisions and appropriate supporting references.

A. PERMIT(S)

TPDES Permit No. WQ0000403000 issued on May 15, 2012.

B. APPLICATION

TPDES wastewater permit application received on August 13, 2013. Additional information received via letters from Bourns (Shell Oil Company) dated April 23, 2014; June 23, 2014; November 24, 2014; March 13, 2015; and May 14, 2015.

C. 40 CFR CITATION(S)

40 CFR Part 122
40 CFR Part 414
40 CFR Part 419

D. LETTERS/MEMORANDA/RECORDS OF COMMUNICATION

TCEQ IOM from Lee (Standards Implementation Team) to Industrial Permits Team, dated October 23, 2013.

TCEQ IOM from Borski (Water Quality Assessment Team) to Industrial Permits Team, dated November 13, 2013.

TCEQ IOM from Harrigan (Water Quality Assessment Team) to Industrial Permits Team, dated November 13, 2013.

TCEQ IOM from Pfeil (Standards Implementation Team) to Industrial Permits Team, dated November 13, 2013.

E. MISCELLANEOUS

The State of Texas 2012 Integrated Report – Texas 303(d) List (Category 5), TCEQ, May 9, 2013.

Texas Surface Water Quality Standards, 30 TAC §§307.1 - 307.10, TCEQ, effective July 22, 2010, as approved by EPA Region 6.

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Texas Surface Water Quality Standards, 30 TAC §§307.1 - 307.10, TCEQ, effective August 17, 2000, and Appendix E, effective February 27, 2002, for portions of the 2010 Standards not yet approved by EPA Region 6.

Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, Third Edition (EPA-821-R-02-014)

Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, (EPA-821-R-02-012)

Procedures to Implement the Texas Surface Water Quality Standards, TCEQ, June 2010, as approved by EPA

Procedures to Implement the Texas Surface Water Quality Standards, TCEQ, January 2003, for portions of the 2010 IP not approved by EPA

Guidance Document for Establishing Monitoring Frequencies for Domestic and Industrial Wastewater Discharge Permits, TCEQ Document No. 98-001.000-OWR-WQ, May 1998.

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Appendix A
Calculated Technology-Based Effluent Limits

The current permit authorizes the discharge of wastewaters from a petroleum refinery [including process wastewaters subject to the petroleum refinery guidelines in 40 CFR Part 419] via Outfall 007 at a daily average flow not to exceed 9.25 MGD.

The applicant is requesting authorization to discharge organic chemicals manufacturing plant [including process wastewaters subject to the organic chemicals, plastics, & synthetic fibers (OCPSF) guidelines in 40 CFR Part 414] wastewaters from the adjacent Shell Oil Company (TPDES Permit No. WQ0000402000) which are diverted during upset conditions. In order to differentiate between the regulatory requirements during normal conditions (discharge of refinery wastewater) and the upset conditions (discharge of refinery and OCPSF wastewaters).

In addition to the request to accept wastewaters from the refinery, the applicant is also requesting authorization to send OCPSF wastewaters to the refinery for treatment during similar upset conditions. Outfall 207 is established to monitor the flow of OCPSF wastewater to the refinery.

The contributing wastewaters for the two treatment systems are as follows:

North Effluent Treater (NET) – Primary treatment system for TPDES Permit No. WQ0000403000

Wastestream	Daily Average Flow (MGD)
Process Wastewater (Refinery – 40 CFR 419)	2.96
Utility (non-process)	3.24
Domestic Wastewater	0.04
Stormwater	1.15
Landfill Leachate	< 0.01

South Effluent Treater (SET) – Primary treatment system for TPDES Permit No. WQ0000402000

Wastestream	Daily Average Flow (MGD)
Process Wastewater (OCPSF – 40 CFR 414)	3.43
Utility (non-process)	1.36
Domestic Wastewater	0.76
Stormwater	1.06

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

NORTH EFFLUENT TREATER

I. Refinery Process Wastewater Allocations/Limitations

BPT

Notes: All BPT guidelines are equivalent to all BCT guidelines.

All BPT guidelines are equivalent to BAT guidelines for COD/TOC, ammonia (as N) and sulfide. bbl = barrels; kbbbl = 1000 barrels

Size Factor [40 CFR §419.22(b)(1)]

Throughput = 340,000 barrels/stream day
= 340 kbbbl/d
Size Factor = 1.41

Process Factor [40 CFR §419.22(b)(2)]

Weighting Factors defined in: 40 CFR §419.42(b)(3)

<u>PROCESS</u>	<u>PROCESS RATE (1000 bbl/day)</u>	<u>PROCESS RATE RELATIVE TO THRU-PUT</u>	<u>WEIGHTING FACTOR</u>	<u>PROCESS CONFIG</u>
<u>Crude Processes</u>				
Vacuum Crude Distillation	155	0.45		
Crude Desalting	340	1.0		
Atmospheric Crude Distillation	340	1.0		
TOTAL	835	2.45	x1	2.45
<u>Cracking and Coking</u>				
Visbreaking	0	0		
Thermal Cracking	0	0		
Fluid Catalytic Cracking	70	0.21		
Moving Bed Catalytic Cracking	0	0		
Hydrocracking	67	0.2		
Delayed Coking	88	0.26		
Fluid Coking	0	0		
TOTAL	225	0.67	x6	4.02
TOTAL REFINERY PROCESS CONFIGURATION:				6.47

Process Factor = 1.09
Multiplier = (Size Factor)*(Process Factor) *(throughput)
= 1.41 * 1.09 * 340
= 522.55

BPT: 40 CFR §419.22(a)

BAT: 40 CFR §419.23(a)

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

BCT: 40 CFR §419.24(a)

lbs/day allocation = (lbs/1000 bbl of feedstock)*(multiplier of 522.55)

TOC substituted for COD at a ratio of 1/2.67 TOC/COD [40 CFR §419.13(d); TOC/COD ratio established in previous fact sheet]

<u>PARAMETER</u>	<u>lbs/1000 bbl of feedstock</u>		<u>lbs/day allocation</u>	
	<u>DLY AVG.</u>	<u>DLY MAX.</u>	<u>DLY AVG.</u>	<u>DLY MAX.</u>
Biochemical Oxygen Demand (5-day)	5.5	9.9	2874.02	5173.24
Total Suspended Solids	4.4	6.9	2299.22	3605.60
Chemical Oxygen Demand	38.4	74.0	20065.92	38668.70
Total Organic Carbon	14.38	27.7	7514.27	14474.64
Oil and Grease	1.6	3.0	836.08	1567.65
Phenolic Compounds	0.036	0.074	18.81	38.67
Ammonia (as N)	3.0	6.6	1567.65	3448.83
Sulfide	0.029	0.065	15.15	33.97
Total Chromium	0.088	0.15	45.98	78.38
Hexavalent Chromium	0.0056	0.012	2.93	6.27
pH	Within the range of 6.0 to 9.0 s.u.		Within the range of 6.0 to 9.0 s.u.	

BAT

BAT guidelines for COD/TOC, ammonia (as N) and sulfide are identical to the BPT guidelines. Please refer to the BPT calculations for the BAT allocations for these pollutants.

The following calculations are for BAT allocations for phenolic compounds, total chromium and hexavalent chromium. Processes utilized in Part II calculations are listed in 40 CFR Part 419, Appendix A (see 1985 EPA guidance document on Petroleum Refining Guidelines application)

<u>SUBCATEGORY</u>	<u>PRODUCTION CAPACITY (kbbbl/day)</u>
<u>Crude</u>	
Vacuum Crude Distillation	155
Crude Desalting	340
Atmospheric Crude Distillation	340
TOTAL	835

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<u>SUBCATEGORY</u>	<u>PRODUCTION CAPACITY (kbbbl/day)</u>
<u>Cracking and Coking</u>	
Visbreaking	0
Thermal Cracking	0
Fluid Catalytic Cracking	70
Moving Bed Catalytic Cracking	0
Hydrocracking	67
Hydroprocessing (Upstream Feedstocks)	0
Delayed Coking	88
Fluid Coking	0
Hydrotreating (Non-Lube Product Hydrofining)	301.5
TOTAL	526.5
<u>Lube</u>	
Hydrofining, Hydrofinishing, Lube Hydrofining	0
White Oil Manufacture	0
Propane: Dewaxing, Deasphalting, Fractioning, Desalting	0
Duo Sol, Solvent Treating/Extraction, Duotreating, Solvent Dewaxing, Solvent Deasphalt	0
Lube Vacuum Tower, Oil Fractionation, Batch Still, Bright Stock Treating	0
Centrifuge and Chilling	0
Dewaxing: MEK, Ketone, MEK-Toluene	0
Deoiling (Wax)	0
Naphthenic Lube Production	0
SO ₂ Extraction	0
Wax Pressing	0
Wax Plant (with Neutral Separation)	0
Furfural Extracting	0
Clay Contacting - Percolation	0
Wax Sweating	0
Acid Treating	0
Phenol Extraction	0
TOTAL	0
<u>Asphalt</u>	
Asphalt Production	0
200 F Softening Point Unfluxed Asphalt	0
Asphalt Oxidizing	0
Asphalt Emulsifying	0
TOTAL	0
<u>Reforming/Alkylation</u>	
H ₂ SO ₄ Alkylation	18.5
Catalytic Reforming	69
TOTAL	87.5

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

Refinery Process Allocations

BAT: 40 CFR §419.23(c)(1)

lbs/day allocation = (lbs/1000 bbl of feedstock)*(feedstock rate in 1000 bbl/day)

PHENOLIC COMPOUNDS

	lbs/1000 bbl of feedstock		FEEDSTOCK	lbs/day allocation	
	DLY AVG.	DLY MAX.	RATE	DLY AVG.	DLY MAX.
Crude	0.003	0.013	835	2.50	10.86
Cracking & Coking	0.036	0.147	526.5	18.95	77.39
Asphalt	0.019	0.079	0.0	0.0	0.0
Lube	0.090	0.369	0.0	0.0	0.0
Reforming & Alkylation	0.032	0.132	87.5	2.80	11.55
			TOTAL	24.25	99.80

TOTAL CHROMIUM

	lbs/1000 bbl of feedstock		FEEDSTOCK	lbs/day allocation	
	DLY AVG.	DLY MAX.	RATE	DLY AVG.	DLY MAX.
Crude	0.004	0.011	835	3.34	9.18
Cracking & Coking	0.041	0.119	526.5	21.58	62.65
Asphalt	0.022	0.064	0.0	0.0	0.0
Lube	0.104	0.299	0.0	0.0	0.0
Reforming & Alkylation	0.037	0.107	87.5	3.24	9.36
			TOTAL	28.16	81.19

HEXAVALENT CHROMIUM

	lbs/1000 bbl of feedstock		FEEDSTOCK	lbs/day allocation	
	DLY AVG.	DLY MAX.	RATE	DLY AVG.	DLY MAX.
Crude	0.0003	0.0007	835	0.25	0.58
Cracking & Coking	0.0034	0.0076	526.5	1.79	4.00
Asphalt	0.0019	0.0041	0.0	0.0	0.0
Lube	0.0087	0.0192	0.0	0.0	0.0
Reforming & Alkylation	0.0031	0.0069	87.5	0.27	0.60
			TOTAL	2.31	5.18

BCT

BCT guidelines for biochemical oxygen demand (5-day), total suspended solids, and oil & grease are identical to the BPT guidelines. Please refer to the BPT calculations for the BAT allocations for these pollutants.

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

Comparison/Selection of BPT, BAT, BCT Allocations for Process Wastewater

Comparison for Daily Average Allocations

POLLUTANT	DAILY AVERAGE (LBS/DAY)		
	BPT	BAT	BCT
Biochemical Oxygen Demand (5-day)	2874.02	n/a	2874.02
Total Suspended Solids	2299.22	n/a	2299.22
Chemical Oxygen Demand	20065.92	20065.92	n/a
Total Organic Carbon	7514.27	7514.27	n/a
Oil and Grease	836.08	n/a	836.08
Phenolic Compounds	18.81	24.25	n/a
Ammonia (as N)	1567.65	1567.65	n/a
Sulfide	15.15	15.15	n/a
Total Chromium	45.98	28.16	n/a
Hexavalent Chromium	2.93	2.31	n/a

Comparison for Daily Maximum Allocations

POLLUTANT	DAILY MAXIMUM (LBS/DAY)		
	BPT	BAT	BCT
Biochemical Oxygen Demand (5-day)	5173.24	n/a	5173.24
Total Suspended Solids	3605.60	n/a	3605.60
Chemical Oxygen Demand	38668.70	38668.70	n/a
Total Organic Carbon	14474.64	14474.64	n/a
Oil and Grease	1567.65	n/a	1567.65
Phenolic Compounds	38.67	99.80	n/a
Ammonia (as N)	3448.83	3448.83	n/a
Sulfide	33.97	33.97	n/a
Total Chromium	78.38	81.19	n/a
Hexavalent Chromium	6.27	5.18	n/a

Selected Allocations

POLLUTANT	DLY AVG LBS/DAY	DLY MAX LBS/DAY
Biochemical Oxygen Demand (5-day)	2874.02	5173.24
Total Suspended Solids	2299.22	3605.60
Chemical Oxygen Demand	20065.92	38668.70
Total Organic Carbon	7514.27	14474.64
Oil and Grease	836.08	1567.65
Phenolic Compounds	18.81	38.67
Ammonia (as N)	1567.65	3448.83
Sulfide	15.15	33.97
Total Chromium	28.16	78.38
Hexavalent Chromium	2.31	5.18

II. **Refinery Contaminated Stormwater Allocations/Limitations**

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BPT: 40 CFR §419.22(e)(2)

BAT: 40 CFR §419.23(f)(2)

BCT: 40 CFR §419.24(e)(2)

Stormwater flow = 800 gpm
= 1,152,000 gallons per day (1,152 k-gal/day)

lbs/day allocation = (lbs/k-gal of flow)*(flow of stormwater of 1,152 k-gal/day)

TOC substituted for COD at a ratio of 1/2.67 TOC/COD [40 CFR §419.13(d); TOC/COD ratio established in previous fact sheet]

PARAMETER	lbs/k-gal of flow		lbs/day allocation	
	DLY AVG.	DLY MAX.	DLY AVG.	DLY MAX.
BOD ₅	0.22	0.40	253.44	460.80
TSS	0.18	0.28	207.36	322.56
COD	1.5	3.0	--	--
TOC	0.562	1.124	647.42	1294.85
Oil and Grease	0.067	0.13	77.18	149.76
Phenolic Compounds	0.0014	0.0029	1.61	3.34
Total Chromium	0.0018	0.0050	2.07	5.76
Hexavalent Chromium	0.00023	0.00052	0.26	0.60
pH	Within the range of 6.0 to 9.0 s.u.		Within the range of 6.0 to 9.0 s.u.	

III. **Refinery Ballast Wastewater Allocations/Limitations**

BPT: 40 CFR §419.12(c)

BAT: 40 CFR §419.13(d)

BCT: 40 CFR §419.14(c)

Ballast water flow = 400 gpm
= 576,000 gallons per day (576 k-gal/day)
(Ballast water flow has been continued from the previous permit).

lbs/day allocation = (lbs/k-gal of flow)*(flow of ballast water of 576 k-gal/day)

TOC substituted for COD at a ratio of 1/2.67 TOC/COD [40 CFR §419.13(d); TOC/COD ratio established in previous fact sheet]

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

PARAMETER	lbs/k-gal of flow		lbs/day allocation	
	DLY AVG.	DLY MAX.	DLY AVG.	DLY MAX.
BOD ₅	0.21	0.40	120.96	230.40
TSS	0.17	0.26	97.92	149.76
COD	2.0	3.9	--	--
TOC	0.749	1.461	431.42	841.54
Oil and Grease	0.067	0.126	38.59	72.58
pH	Within the range of 6.0 to 9.0 s.u.		Within the range of 6.0 to 9.0 s.u.	

IV. **Utility Wastewater Allocations/Limitations**

Allocations for pollutants are based on BPJ.

$$\begin{aligned} \text{Utility Wastewater} &= 3.24 \text{ MGD} \\ \text{lbs/day allocation} &= (\text{mg/L allocation}) * (3.24 \text{ MGD flow}) * (8.345) \end{aligned}$$

Allocations:

PARAMETER	DLY AVG. mg/L	DLY MAX. mg/L	DLY AVG. lbs/day	DLY MAX. lbs/day
BOD ₅	5	10	135.19	270.38
TSS	30	100	811.13	2703.78
COD	70	140	1892.65	3785.29
TOC	25	50	675.94	1351.89
Oil and Grease	15	20	405.57	540.76

All other pollutants - no allocations.

V. **Domestic Wastewater Allocations/Limitations**

Allocations for conventional pollutants are based on 30 TAC 309.

$$\begin{aligned} \text{Domestic Wastewater} &= 0.140 \text{ MGD} \\ \text{lbs/day allocation} &= (\text{mg/L allocation}) * (0.140 \text{ MGD flow}) * (8.345) \end{aligned}$$

Allocations:

PARAMETER	DLY AVG. mg/L	DLY MAX. mg/L	DLY AVG. lbs/day	DLY MAX. lbs/day
BOD ₅	20	45	23.37	52.57
TSS	20	45	23.37	52.57
TOC	44	100	51.40	116.83

All other pollutants - no allocation.

VI. **NET Summations**

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

BOD₅:	DAILY AVG lbs/day	DAILY MAX lbs/day
Process Wastewater:	2874.02	5173.24
Ballast Water:	120.96	230.40
Stormwater:	253.44	460.80
Domestic Wastewater:	23.37	52.57
TOTAL:	3271.79	5917.01

TSS:	DAILY AVG lbs/day	DAILY MAX lbs/day
Process Wastewater:	2299.22	3605.60
Ballast Water:	97.92	149.76
Stormwater:	207.36	322.56
Domestic Wastewater:	23.37	52.57
TOTAL:	2627.87	4130.49

TOC:	DAILY AVG lbs/day	DAILY MAX lbs/day
Process Wastewater:	7514.27	14474.64
Ballast Water:	431.42	841.54
Stormwater:	647.42	1294.85
Domestic Wastewater:	51.40	116.83
TOTAL:	8644.51	16727.86

Oil and Grease:	DAILY AVG lbs/day	DAILY MAX lbs/day
Process Wastewater:	836.08	1567.65
Ballast Water:	38.59	72.58
Stormwater:	77.18	149.76
Domestic Wastewater:	--	--
TOTAL:	951.85	1789.99

Phenolic Compounds:	DAILY AVG lbs/day	DAILY MAX lbs/day
Process Wastewater:	18.81	38.67
Ballast Water:	--	--
Stormwater:	1.61	3.34
Domestic Wastewater:	--	--
TOTAL:	20.42	42.01

Ammonia (as Nitrogen)	DAILY AVG lbs/day	DAILY MAX lbs/day
Process Wastewater:	1567.65	3448.83
Ballast Water:	--	--
Stormwater:	--	--
Domestic Wastewater:	--	--
TOTAL:	1567.65	3448.83

Sulfides	DAILY AVG lbs/day	DAILY MAX lbs/day

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Process Wastewater:	15.15	33.97
Ballast Water:	--	--
Stormwater:	--	--
Domestic Wastewater:	--	--
TOTAL:	15.15	33.97

Total Chromium	DAILY AVG lbs/day	DAILY MAX lbs/day
Process Wastewater:	28.16	78.38
Ballast Water:	--	--
Stormwater:	2.07	5.76
Domestic Wastewater:	--	--
TOTAL:	30.29	84.14

Hexavalent Chromium	DAILY AVG lbs/day	DAILY MAX lbs/day
Process Wastewater:	2.31	5.18
Ballast Water:	--	--
Stormwater:	0.26	0.60
Domestic Wastewater:	--	--
TOTAL:	2.57	5.78

VII. **NET Limitations/Allocations**

Pollutant	Dly Avg Lbs/day	Dly Max Lbs/day
BOD ₅	3272	5917
TSS	2628	4130
TOC	8644	16728
Oil and Grease	952	1790
Phenolic Compounds	20.4	42.0
Ammonia (as N)	1568	3449
Sulfides	15.2	34.0
Total Chromium	30.3	84.1
Hexavalent Chromium	2.57	5.78

The NET allocations/limitations are the calculated technology-based effluent limitations for the on-site (petroleum refinery) generated wastewaters that are regulated at Outfall 007. See Appendix C for comparisons of these limitations to current limitations and calculated water quality-based effluent limitations.

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

SOUTH EFFLUENT TREATER

I. OCPSTF Process Wastewater Allocations/Limitations

Conventional Pollutants

The allowances for wastewaters identified as process wastewater were calculated based on the criteria established in 40 CFR Parts 414.41 (Subpart D), 414.51 (Subpart E), 414.61 (Subpart F), 414.71 (Subpart G), and 414.81 (Subpart H).

Thermosetting Resins Process Wastewater (414.51 - Subpart E)	3.1%
Commodity Organic Chemicals Process Wastewater (414.61 - Subpart F)	75.3%
Bulk Organic Chemicals Process Wastewater (414.71 - Subpart G)	11.9%
Specialty Organic Chemicals Process Wastewater (414.81 - Subpart H)	9.7%

BOD₅-Avg

Sub-E	(61 mg/l) * (0.031)	=	1.891
Sub-F	(30 mg/l) * (0.753)	=	22.590
Sub-G	(34 mg/l) * (0.119)	=	4.046
Sub-H	(45 mg/l) * (0.097)	=	<u>4.365</u>
			32.892

BOD₅-Max

Sub-E	(163 mg/l) * (0.031)	=	5.053
Sub-F	(80 mg/l) * (0.753)	=	60.240
Sub-G	(92 mg/l) * (0.119)	=	10.948
Sub-H	(120 mg/l) * (0.097)	=	<u>11.640</u>
			87.881

TSS-Avg

Sub-E	(67 mg/l) * (0.031)	=	2.077
Sub-F	(46 mg/l) * (0.753)	=	34.638
Sub-G	(49 mg/l) * (0.119)	=	5.831
Sub-H	(57 mg/l) * (0.097)	=	<u>5.529</u>
			48.075

TSS-Max

Sub-E	(216 mg/l) * (0.031)	=	6.696
Sub-F	(149 mg/l) * (0.753)	=	112.197
Sub-G	(159 mg/l) * (0.119)	=	18.921
Sub-H	(183 mg/l) * (0.097)	=	<u>17.751</u>
			155.565

Process Wastewater (Part 414 Subparts E, F, G, & H)

BOD-5 DLY AVG	3.43 MGD * 32.892 mg/l * 8.345	=	941.48 lbs/day
BOD-5 DLY MAX	3.43 MGD * 87.881 mg/l * 8.345	=	2515.45 lbs/day
TSS DLY AVG	3.43 MGD * 48.075 mg/l * 8.345	=	1376.07 lbs/day
TSS DLY MAX	3.43 MGD * 155.565 mg/l * 8.345	=	4452.79 lbs/day

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

Toxic Pollutants

The allocations for the toxic pollutants are based on the associated process wastewater flows and the applicable criteria from 40 CFR Part 414.91. Allocations/limitations are calculated based on the following equation:

$$\text{Limit (lbs/day)} = [\text{guideline (ug/l)/1000}] * [\text{applicable wastewater flow (MGD)}] * 8.345$$

The applicable wastewater flow is the "Process Wastewater Flow" for the organic parameters and the specified "Bearing Wastewater Flow" for the respective metals.

Total Flow from Outfall 001	9.9 (MGD)
Process Wastewater Flow	3.43 (MGD)
Copper Bearing Wastewater Flow	0.36 (MGD)
Nickel Bearing Wastewater Flow	0.04176 (MGD)

Parameter	Dly Avg (ug/l)	Dly Max (ug/l)		Dly Avg (lb/day)	Dly Max (lb/day)
Chromium	1110	2770		0.000	0.000
Zinc	1050	2610		0.000	0.000
Copper	1450	3380		4.36	10.2
Lead	320	690		0.000	0.000
Nickel	1690	3980		0.59	1.39
Cyanide	420	1200		0.00	0.00
Acenaphthene	22	59		0.63	1.69
Acenaphthylene	22	59		0.63	1.69
Acrylonitrile	96	242		2.75	6.93
Anthracene	22	59		0.63	1.69
Benzene	37	136		1.06	3.89
Benzo(a)anthracene	22	59		0.63	1.69
Benzo(a)pyrene	23	61		0.66	1.75
3,4-Benzofluoranthene	23	61		0.66	1.75
Benzo(k)fluoranthene	22	59		0.63	1.69
Bis(2-ethylhexyl)phthalate	103	279		2.95	7.99
Carbon Tetrachloride	18	38		0.52	1.09
Chlorobenzene	15	28		0.43	0.80
Chloroethane	104	268		2.98	7.67
Chloroform	21	46		0.60	1.32
2-Chlorophenol	31	98		0.89	2.81
Chrysene	22	59		0.63	1.69
1,2-Dichlorobenzene	77	163		2.20	4.67
1,3-Dichlorobenzene	31	44		0.89	1.26
1,4-Dichlorobenzene	15	28		0.43	0.80
1,1-Dichloroethane	22	59		0.63	1.69
Parameter	Dly Avg	Dly Max		Dly Avg	Dly Max

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

	(ug/l)	(ug/l)		(lb/day)	(lb/day)
1,2-Dichloroethane	68	211		1.95	6.04
1,1-Dichloroethylene	16	25		0.46	0.72
1,2-trans Dichloroethylene	21	54		0.60	1.55
2,4-Dichlorophenol	39	112		1.12	3.21
1,2-Dichloropropane	153	230		4.38	6.58
1,3-Dichloropropylene	29	44		0.83	1.26
Diethyl phthalate	81	203		2.32	5.81
2,4-Dimethylphenol	18	36		0.52	1.03
Dimethyl phthalate	19	47		0.54	1.35
Di-n-butyl phthalate	27	57		0.77	1.63
4,6-Dinitro-o-cresol	78	277		2.23	7.93
2,4-Dinitrophenol	71	123		2.03	3.52
2,4-Dinitrotoluene	113	285		3.23	8.16
2,6-Dinitrotoluene	255	641		7.30	18.35
Ethylbenzene	32	108		0.92	3.09
Fluoranthene	25	68		0.72	1.95
Fluorene	22	59		0.63	1.69
Hexachlorobenzene	15	28		0.43	0.80
Hexachlorobutadiene	20	49		0.57	1.40
Hexachloroethane	21	54		0.60	1.55
Methyl Chloride	86	190		2.46	5.44
Methylene Chloride	40	89		1.14	2.55
Naphthalene	22	59		0.63	1.69
Nitrobenzene	27	68		0.77	1.95
2-Nitrophenol	41	69		1.17	1.98
4-Nitrophenol	72	124		2.06	3.55
Phenanthrene	22	59		0.63	1.69
Phenol	15	26		0.43	0.74
Pyrene	25	67		0.72	1.92
Tetrachloroethylene	22	56		0.63	1.60
Toluene	26	80		0.74	2.29
1,2,4-Trichlorobenzene	68	140		1.95	4.01
1,1,1-Trichloroethane	21	54		0.60	1.55
1,1,2-Trichloroethane	21	54		0.60	1.55
Trichloroethylene	21	54		0.60	1.55
Vinyl Chloride	104	268		2.98	7.67

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

II. **Utility Wastewater Allocations/Limitations**

Allocations for conventional pollutants are based on BPJ.

$$\begin{aligned} \text{Utility Wastewater} &= 1.36 \text{ MGD} \\ \text{lbs/day allocation} &= (\text{mg/L criteria}) * (1.36 \text{ MGD flow}) * (8.345) \end{aligned}$$

Allocations:

PARAMETER	DLY AVG. mg/L	DLY MAX. mg/L	DLY AVG. lbs/day	DLY MAX. lbs/day
BOD ₅	5	10	56.75	113.49
TSS	30	100	340.48	1134.92

III. **Sanitary Wastewater Allocations/Limitations**

Allocations for conventional pollutants are based on 30 TAC 309.

$$\begin{aligned} \text{Sanitary Wastewater} &= 0.76 \text{ MGD} \\ \text{lbs/day allocation} &= (\text{mg/L criteria}) * (0.76 \text{ MGD flow}) * (8.345) \end{aligned}$$

Allocations:

PARAMETER	DLY AVG. mg/L	DLY MAX. mg/L	DLY AVG. lbs/day	DLY MAX. lbs/day
BOD ₅	20	45	126.84	285.40
TSS	20	45	126.84	285.40

IV. **Stormwater Allocations/Limitations**

Allocations for conventional pollutants are based on BPJ.

$$\begin{aligned} \text{Stormwater} &= 1.06 \text{ MGD} \\ \text{lbs/day allocation} &= (\text{mg/L allocation}) * (1.06 \text{ MGD flow}) * (8.345) \end{aligned}$$

Allocations:

PARAMETER	DLY AVG. mg/L	DLY MAX. mg/L	DLY AVG. lbs/day	DLY MAX. lbs/day
BOD ₅	10	20	88.46	176.91
TSS	50	100	442.28	884.57

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

V. **SET Conventional Pollutant Summations**

<u>BOD₅</u>:	lbs/day allocation	
	<u>DAILY AVG.</u>	<u>DAILY MAX.</u>
Process Wastewater:	941.48	2515.45
Utility Water:	56.75	113.49
Stormwater:	88.46	176.91
Domestic Wastewater:	126.84	285.40
TOTAL:	1213.53	3091.25

<u>TSS:</u>	lbs/day allocation	
	<u>DAILY AVG.</u>	<u>DAILY MAX.</u>
Process Wastewater:	1376.07	4452.79
Ballast Water:	340.48	1134.92
Stormwater:	442.28	884.57
Domestic Wastewater:	126.84	285.40
TOTAL:	2285.67	6757.68

VI. **SET Limitations/Allocations**

Pollutant	Dly Avg Lbs/day	Dly Max Lbs/day
BOD ₅	1214	3091
TSS	2286	6758
Copper	4.36	10.2
Nickel	0.589	1.387
Acenaphthene	0.63	1.69
Acenaphthylene	0.63	1.69
Acrylonitrile	2.75	6.93
Anthracene	0.63	1.69
Benzene	1.06	3.89
Benzo(a)anthracene	0.63	1.69
Benzo(a)pyrene	0.66	1.75
3,4-Benzofluoranthene	0.66	1.75
Benzo(k)fluoranthene	0.63	1.69
Bis(2-ethylhexyl)phthalate	2.95	7.99
Carbon Tetrachloride	0.52	1.09
Chlorobenzene	0.43	0.80
Chloroethane	2.98	7.67
Chloroform	0.60	1.32
2-Chlorophenol	0.89	2.81
Chrysene	0.63	1.69
1,2-Dichlorobenzene	2.20	4.67
1,3-Dichlorobenzene	0.89	1.26
1,4-Dichlorobenzene	0.43	0.80
1,1-Dichloroethane	0.63	1.69
1,2-Dichloroethane	1.95	6.04
	Dly Avg	Dly Max

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

Pollutant	Lbs/day	Lbs/day
1,1-Dichloroethylene	0.46	0.72
1,2-trans Dichloroethylene	0.60	1.55
2,4-Dichlorophenol	1.12	3.21
1,2-Dichloropropane	4.38	6.58
1,3-Dichloropropylene	0.83	1.26
Diethyl phthalate	2.32	5.81
2,4-Dimethylphenol	0.52	1.03
Dimethyl phthalate	0.54	1.35
Di-n-butyl phthalate	0.77	1.63
4,6-Dinitro-o-cresol	2.23	7.93
2,4-Dinitrophenol	2.03	3.52
2,4-Dinitrotoluene	3.23	8.16
2,6-Dinitrotoluene	7.30	18.35
Ethylbenzene	0.92	3.09
Fluoranthene	0.72	1.95
Fluorene	0.63	1.69
Hexachlorobenzene	0.43	0.80
Hexachlorobutadiene	0.57	1.40
Hexachloroethane	0.60	1.55
Methyl Chloride	2.46	5.44
Methylene Chloride	1.14	2.55
Naphthalene	0.63	1.69
Nitrobenzene	0.77	1.95
2-Nitrophenol	1.17	1.98
4-Nitrophenol	2.06	3.55
Phenanthrene	0.63	1.69
Phenol	0.43	0.74
Pyrene	0.72	1.92
Tetrachloroethylene	0.63	1.60
Toluene	0.74	2.29
1,2,4-Trichlorobenzene	1.95	4.01
1,1,1-Trichloroethane	0.60	1.55
1,1,2-Trichloroethane	0.60	1.55
Trichloroethylene	0.60	1.55
Vinyl Chloride	2.98	7.67

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

Combined Effluent from NET & SET Units.

The discharge from the NET is currently authorized to be discharged via Outfall 007 of this TPDES permit (WQ0000403000) at a daily average flow rate of 9.25 MGD. The discharge from the SET is currently authorized to be discharged via Outfall 004 of TPDES Permit No. WQ0000402000 at a daily average flow rate of 9.9 MGD. The applicant has requested the authorization to divert wastewaters from the SET to the NET for treatment and discharge via Outfall 007 of WQ0000403000, and authorization to divert wastewaters from the NET to the SET for treatment and discharge via Outfall 004 of WQ0000402000. The applicant has stated that it is not requesting an increase in the permitted flows for these outfalls. Since the permittee is not requesting an increase in the permitted flows for the outfalls during the diversion events, the loadings will not be combined from two (NET & SET) sources.

The only pollutants in common for both the NET and the SET are biochemical oxygen demand (5-day), total suspended solids, and pH. The calculated technology-based effluent limitations for biochemical oxygen demand (5-day) and total suspended solids for the on-site contributing source (NET) are greater than those from the off-site contributing source (SET) and, therefore, allow for all combinations of contributing sources. The effluent limitations for pH are identical for both contributing sources.

Effluent limitations for biochemical oxygen demand (5-day), total suspended solids, and pH will be imposed at final Outfall 007 and will control for diverted wastewaters from the SET.

Effluent limitations for all other pollutants associated with the NET will be monitored and reported at final Outfall 007.

Effluent limitations for all other pollutants associated with the SET will be monitored and reported at internal Outfall 007 when the SET wastewater is diverted to the NET.

POLLUTANT	NET		SET		COMBINED	
	Dly Avg lbs/day	Dly Max lbs/day	Dly Avg lbs/day	Dly Max lbs/day	Dly Avg lbs/day	Dly Max lbs/day
Biochemical Oxygen Demand (5-day)	3272	5917	1214	3091	3272	5917
Total Suspended Solids	2628	4130	2286	6758	2628	4130
Total Organic Carbon	8644	16728	----	----	8644	16728
Oil and Grease	952	1790	----	----	952	1790
Phenols	20.4	42.0	----	----	20.4	42.0
Ammonia as Nitrogen	1568	3449	----	----	1568	3449
Sulfides	15.2	34.0	----	----	15.2	34.0
Chromium, Total	30.3	84.1	----	----	30.3	84.1
Chromium, Hexavalent	2.57	5.78	----	----	2.57	5.78
Copper	----	----	4.36	10.2	4.36	10.2
Nickel	----	----	0.589	1.387	0.589	1.387
Acenaphthene	----	----	0.63	1.69	0.63	1.69
Acenaphthylene	----	----	0.63	1.69	0.63	1.69
Acrylonitrile	----	----	2.75	6.93	2.75	6.93
Anthracene	----	----	0.63	1.69	0.63	1.69
Benzene	----	----	1.06	3.89	1.06	3.89
Benzo(a)anthracene	----	----	0.63	1.69	0.63	1.69

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

Benzo(a)pyrene	----	----	0.66	1.75	0.66	1.75
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FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

POLLUTANT	NET		SET		COMBINED	
	Dly Avg lbs/day	Dly Max lbs/day	Dly Avg lbs/day	Dly Max lbs/day	Dly Avg lbs/day	Dly Max lbs/day
3,4-Benzofluoranthene	----	----	0.66	1.75	0.66	1.75
Benzo(k)fluoranthene	----	----	0.63	1.69	0.63	1.69
Bis(2-ethylhexyl)phthalate	----	----	2.95	7.99	2.95	7.99
Carbon Tetrachloride	----	----	0.52	1.09	0.52	1.09
Chlorobenzene	----	----	0.43	0.80	0.43	0.80
Chloroethane	----	----	2.98	7.67	2.98	7.67
Chloroform	----	----	0.60	1.32	0.60	1.32
2-Chlorophenol	----	----	0.89	2.81	0.89	2.81
Chrysene	----	----	0.63	1.69	0.63	1.69
1,2-Dichlorobenzene	----	----	2.20	4.67	2.20	4.67
1,3-Dichlorobenzene	----	----	0.89	1.26	0.89	1.26
1,4-Dichlorobenzene	----	----	0.43	0.80	0.43	0.80
1,1-Dichloroethane	----	----	0.63	1.69	0.63	1.69
1,2-Dichloroethane	----	----	1.95	6.04	1.95	6.04
1,1-Dichloroethylene	----	----	0.46	0.72	0.46	0.72
1,2-trans Dichloroethylene	----	----	0.60	1.55	0.60	1.55
2,4-Dichlorophenol	----	----	1.12	3.21	1.12	3.21
1,2-Dichloropropane	----	----	4.38	6.58	4.38	6.58
1,3-Dichloropropylene	----	----	0.83	1.26	0.83	1.26
Diethyl phthalate	----	----	2.32	5.81	2.32	5.81
2,4-Dimethylphenol	----	----	0.52	1.03	0.52	1.03
Dimethyl phthalate	----	----	0.54	1.35	0.54	1.35
Di-n-butyl phthalate	----	----	0.77	1.63	0.77	1.63
4,6-Dinitro-o-cresol	----	----	2.23	7.93	2.23	7.93
2,4-Dinitrophenol	----	----	2.03	3.52	2.03	3.52
2,4-Dinitrotoluene	----	----	3.23	8.16	3.23	8.16
2,6-Dinitrotoluene	----	----	7.30	18.35	7.30	18.35
Ethylbenzene	----	----	0.92	3.09	0.92	3.09
Fluoranthene	----	----	0.72	1.95	0.72	1.95
Fluorene	----	----	0.63	1.69	0.63	1.69
Hexachlorobenzene	----	----	0.43	0.80	0.43	0.80
Hexachloroethane	----	----	0.60	1.55	0.60	1.55
Hexachlorobutadiene	----	----	0.57	1.40	0.57	1.40
Methyl Chloride	----	----	2.46	5.44	2.46	5.44
Methylene Chloride	----	----	1.14	2.55	1.14	2.55
Naphthalene	----	----	0.63	1.69	0.63	1.69
Nitrobenzene	----	----	0.77	1.95	0.77	1.95
2-Nitrophenol	----	----	1.17	1.98	1.17	1.98
4-Nitrophenol	----	----	2.06	3.55	2.06	3.55
Phenanthrene	----	----	0.63	1.69	0.63	1.69
Phenol	----	----	0.43	0.74	0.43	0.74
Pyrene	----	----	0.72	1.92	0.72	1.92

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

POLLUTANT	NET		SET		COMBINED	
	Dly Avg lbs/day	Dly Max lbs/day	Dly Avg lbs/day	Dly Max lbs/day	Dly Avg lbs/day	Dly Max lbs/day
Tetrachloroethylene	----	----	0.63	1.60	0.63	1.60
Toluene	----	----	0.74	2.29	0.74	2.29
1,2,4-Trichlorobenzene	----	----	1.95	4.01	1.95	4.01
1,1,1-Trichloroethane	----	----	0.60	1.55	0.60	1.55
1,1,2-Trichloroethane	----	----	0.60	1.55	0.60	1.55
Trichloroethylene	----	----	0.60	1.55	0.60	1.55
Vinyl Chloride	----	----	2.98	7.67	2.98	7.67

OUTFALL 108

STORMWATER ALLOCATIONS

BPT: 40 CFR §419.22(e)(2)
 BAT: 40 CFR §419.23(f)(2)
 BCT: 40 CFR §419.24(e)(2)

Stormwater flow = 45,000,000 gallons per day (45,000 k-gal/day)

lbs/day allocation = (lbs/k-gal of flow)*(flow of stormwater of 45,000 k-gal/day)
 TOC substituted for COD at a ratio of 1/2.67 TOC/COD [40 CFR §419.13(d); TOC/COD ratio established in previous fact sheet]

<u>PARAMETER</u>	<u>lbs/k-gal of flow</u>		<u>lbs/day allocation</u>	
	<u>DLY AVG.</u>	<u>DLY MAX.</u>	<u>DLY AVG.</u>	<u>DLY MAX.</u>
BOD ₅	0.22	0.40	9900	18000
TSS	0.18	0.28	8100	12600
COD	1.5	3.0	67500	135000
TOC	0.562	1.124	25290	50580
Oil and Grease	0.067	0.13	3015	5850
Phenolic Compounds	0.0014	0.0029	63.0	130.5
Total Chromium	0.0018	0.0050	81.0	225
Hexavalent Chromium	0.00023	0.00052	10.35	23.4
pH	Within the range of 6.0 to 9.0 s.u.		Within the range of 6.0 to 9.0 s.u.	

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

Appendix B
Calculated Water Quality-Based Effluent Limits

TEXTOX MENU #5 - BAY OR WIDE TIDAL RIVER

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2010 Texas Surface Water Quality Standards (30 TAC 307) for Saltwater Aquatic Life

Table 2, 2010 Texas Surface Water Quality Standards for Human Health (except Mercury)

Table 3, 2000 Texas Surface Water Quality Standards for Human Health (Mercury)

"Procedures to Implement the Texas Surface Water Quality Standards," Texas Commission on Environmental Quality, June 2010

PERMIT INFORMATION

Permittee Name:	Shell Oil Company and Deer Park Refining Limited Partnership
TPDES Permit No:	WQ0000403000
Outfall No:	002
Prepared by:	Sunderlin
Date:	12/16/2013

DISCHARGE INFORMATION

Receiving Waterbody:	Houston Ship Channel Tidal
Segment No:	1006
TSS (mg/L):	10
Chloride (mg/L):	2090
Effluent Flow for Aquatic Life (MGD)	< 10 MGD
Percent Effluent for Mixing Zone:	50
Percent Effluent for Zone of Initial Dilution:	100
Oyster Waters:	no
Effluent Flow for Human Health (MGD):	< 10 MGD
Percent Effluent for Human Health:	25

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

<i>Estuarine Metal</i>	<i>Intercept (b)</i>	<i>Slope (m)</i>	<i>Partition Coefficient (Kp)</i>	<i>Dissolved Fraction (Cd/Ct)</i>		<i>Water Effect Ratio (WER)</i>	
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Cadmium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (Total)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (+3)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (+6)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	4.85	-0.72	13489.63	0.88		1.80	30 TAC 307
Lead	6.06	-0.85	162181.01	0.3814159		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	5.86	-0.74	131825.67	0.43		1.00	Assumed
Zinc	5.36	-0.52	69183.10	0.59		1.00	Assumed

CONVERT TISSUE-BASED CRITERIA TO WATER COLUMN CRITERIA:

<i>Parameter</i>	<i>Fish Only Criterion (ug/kg)</i>	<i>BCF (l/kg)</i>	<i>Fish Only Criterion (ug/L)</i>
4,4'-DDD	166.16	53600	0.0031
4,4'-DDE	214.4	53600	0.004
4,4'-DDT	209.04	53600	0.0039
Dioxins/Furans	0.0004	5000	8.00E-08
Mercury			
Polychlorinated Biphenyls (PCBs)	19.96	31200	6.40E-04

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

<i>Parameter</i>	<i>SW Acute Criterion (ug/L)</i>	<i>SW Chronic Criterion (ug/L)</i>	<i>WLAa</i>	<i>WLAc</i>	<i>LTAa</i>	<i>LTAc</i>	<i>Daily Avg. (ug/L)</i>	<i>Daily Max. (ug/L)</i>
Aldrin	1.3	N/A	1.30	N/A	0.42	N/A	0.61	1.29
Aluminum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic	149	78	149	156	47.7	95.2	70.1	148
Cadmium	40	8.75	40.0	17.5	12.8	10.7	15.7	33.2
Carbaryl	613	N/A	613	N/A	196	N/A	288	610
Chlordane	0.09	0.004	0.090	0.008	0.029	0.005	0.007	0.015
Chlorpyrifos	0.011	0.006	0.011	0.012	0.004	0.007	0.005	0.011
Chromium (+3)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium (+6)	1090	49.6	1090	99.2	349	60.5	89.0	188
Copper	24.3	6.48	27.6	14.7	8.82	8.97	13.0	27.4
Copper (oyster waters)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide	5.6	5.6	5.60	11.2	1.79	6.83	2.63	5.57
4,4'-DDT	0.13	0.001	0.130	0.0020	0.042	0.0012	0.0018	0.0038
Demeton	N/A	0.1	N/A	0.20	N/A	0.12	0.18	0.38
Diazinon	0.819	0.819	0.82	1.64	0.26	1.00	0.39	0.82
Dicofol	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dieldrin	0.71	0.002	0.710	0.004	0.227	0.002	0.004	0.008
Diuron	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Endosulfan I (alpha)	0.034	0.009	0.034	0.018	0.011	0.011	0.016	0.034
Endosulfan II (beta)	0.034	0.009	0.034	0.018	0.011	0.011	0.016	0.034
Endosulfan sulfate	0.034	0.009	0.034	0.018	0.011	0.011	0.016	0.034
Endrin	0.037	0.002	0.037	0.004	0.012	0.002	0.004	0.008
Guthion	N/A	0.01	N/A	0.020	N/A	0.012	0.018	0.038
Heptachlor	0.053	0.004	0.053	0.008	0.017	0.005	0.007	0.015
Hexachlorocyclohexane (Lindane)	0.16	N/A	0.160	N/A	0.051	N/A	0.075	0.159
Lead	133	5.3	349	27.8	112	17.0	24.9	52.7
Malathion	N/A	0.01	N/A	0.020	N/A	0.012	0.018	0.038
Mercury	2.1	1.1	2.1	2.20	0.67	1.34	0.99	2.09
Methoxychlor	N/A	0.03	N/A	0.0600	N/A	0.0366	0.0538	0.114
Mirex	N/A	0.001	N/A	0.0020	N/A	0.0012	0.0018	0.0038
Nickel	118	13.1	118	26.2	37.8	16.0	23.5	49.7
Nonylphenol	7	1.7	7.00	3.40	2.24	2.07	3.05	6.45
Parathion (ethyl)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pentachlorophenol	15.1	9.6	15.1	19.2	4.83	11.7	7.10	15.0
Phenanthrene	7.7	4.6	7.70	9.20	2.46	5.61	3.62	7.66
Polychlorinated Biphenyls (PCBs)	10	0.03	10.0	0.06	3.20	0.04	0.05	0.11
Selenium	564	136	564	272	180	166	244	516
Silver (free ion)	2	N/A	4.64	N/A	1.48	N/A	2.18	4.61
Toxaphene	0.21	0.0002	0.210	0.00040	0.067	0.00024	0.00036	0.00076
Tributyltin (TBT)	0.24	0.0074	0.240	0.015	0.077	0.009	0.013	0.028
2,4,5 Trichlorophenol	259	12	259	24.0	82.9	14.6	21.5	45.5
Zinc	92.7	84.2	157	285	50.2	174	73.8	156

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

HUMAN HEALTH

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

<i>Parameter</i>	<i>Fish Only Criterion (ug/L)</i>	<i>WLAh</i>	<i>LTAh</i>	<i>Daily Avg. (ug/L)</i>	<i>Daily Max. (ug/L)</i>
Acrylonitrile	3.8	15.2	14.1	20.8	44.0
Aldrin	0.001	0.0040	0.0037	0.0055	0.0116
Anthracene	N/A	N/A	N/A	N/A	N/A
Antimony	1071	4284	3984	5857	12391
Arsenic	N/A	N/A	N/A	N/A	N/A
Barium	N/A	N/A	N/A	N/A	N/A
Benzene	513	2052	1908	2805	5935
Benzidine	0.002	0.008	0.007	0.011	0.023
Benzo(a)anthracene	0.33	1.32	1.23	1.80	3.82
Benzo(a)pyrene	0.33	1.32	1.23	1.80	3.82
Bis(chloromethyl)ether	0.44	1.76	1.64	2.41	5.09
Bis(2-chloroethyl)ether	5.27	21.1	19.6	28.8	61.0
Bis(2-ethylhexyl)phthalate	41	164	153	224	474
Bromodichloromethane	322	1288	1198	1761	3725
Bromoform	2175	8700	8091	11894	25163
Cadmium	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	29	116	108	159	336
Chlordane	0.0081	0.0324	0.0301	0.0443	0.0937
Chlorobenzene	5201	20804	19348	28441	60171
Chlorodibromomethane (Dibromochloromethane)	239	956	889	1307	2765
Chloroform	7143	28572	26572	39061	82639
Chromium (+6)	502	2008	1867	2745	5808
Chrysene	327	1308	1216	1788	3783
Cresols	1981	7924	7369	10833	22919
Cyanide	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.0031	0.0124	0.0115	0.0170	0.0359
4,4'-DDE	0.004	0.0160	0.0149	0.0219	0.0463
4,4'-DDT	0.0039	0.0156	0.0145	0.0213	0.0451
2,4'-D	N/A	N/A	N/A	N/A	N/A
Danitol	5.44	21.8	20.2	29.7	62.9
1,2-Dibromoethane	2.13	8.52	7.92	11.6	24.6
m-Dichlorobenzene	1445	5780	5375	7902	16717
o-Dichlorobenzene	4336	17344	16130	23711	50164
p-Dichlorobenzene	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	0.44	1.76	1.64	2.41	5.09
1,2-Dichloroethane	553	2212	2057	3024	6398
1,1-Dichloroethylene	23916	95664	88968	130782	276689
Dichloromethane	5926	23704	22045	32406	68559
1,2-Dichloropropane	226	904	841	1236	2615
1,3-Dichloropropene (1,3- Dichloropropylene)	211	844	785	1154	2441
Dicofol	0.076	0.304	0.283	0.416	0.879
Dieldrin	0.0005	0.0020	0.0019	0.0027	0.0058
2,4-Dimethylphenol	571	2284	2124	3122	6606
Di-n-Butyl Phthalate	3010	12040	11197	16460	34823
Dioxins/Furans (TCDD Equivalents)	8.00E-08	3.20E-07	2.98E-07	4.37E-07	9.26E-07
Endrin	0.2	0.80	0.74	1.09	2.31
Ethylbenzene	7143	28572	26572	39061	82639
Fluoride	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.0015	0.0060	0.0056	0.0082	0.0174
Heptachlor Epoxide	0.00075	0.0030	0.0028	0.0041	0.0087
Hexachlorobenzene	0.0045	0.0180	0.0167	0.0246	0.0521
Hexachlorobutadiene	274	1096	1019	1498	3170
<i>Parameter</i>	<i>Fish Only</i>	<i>WLAh</i>	<i>LTAh</i>	<i>Daily Avg.</i>	<i>Daily Max.</i>

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

	<i>Criterion</i> <i>(ug/L)</i>		<i>(ug/L)</i>		<i>(ug/L)</i>
Hexachlorocyclohexane (alpha)	0.093	0.372	0.346	0.509	1.08
Hexachlorocyclohexane (beta)	0.33	1.32	1.23	1.80	3.82
Hexachlorocyclohexane (gamma) (Lindane)	6.2	24.8	23.1	33.9	71.7
Hexachlorocyclopentadiene	N/A	N/A	N/A	N/A	N/A
Hexachloroethane	62	248	231	339	717
Hexachlorophene	0.008	0.0320	0.0298	0.0437	0.0926
Lead	3.83	40.2	37.4	54.9	116
Mercury	0.0122	0.049	0.045	0.067	0.141
Methoxychlor	0.33	1.32	1.23	1.80	3.82
Methyl Ethyl Ketone	1500000	6.00E+06	5.58E+06	8.20E+06	1.74E+07
Nickel	1140	4560	4241	6234	13189
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	463	1852	1722	2532	5357
N-Nitrosodiethylamine	2.1	8.40	7.81	11.5	24.3
N-Nitroso-di-n-Butylamine	4.2	16.8	15.6	23.0	48.6
Pentachlorobenzene	1	4.00	3.72	5.47	11.57
Pentachlorophenol	57	228	212	312	659
Polychlorinated Biphenyls (PCBs)	6.40E-04	0.0026	0.0024	0.0035	0.0074
Pyridine	2014	8056	7492	11013	23300
Selenium	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.71	2.84	2.64	3.88	8.21
1,1,2,2-Tetrachloroethane	76	304	283	416	879
Tetrachloroethylene	49	196	182	268	567
Thallium	1.5	6.00	5.58	8.20	17.4
Toluene	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.0053	0.021	0.020	0.029	0.061
2,4,5-TP (Silvex)	7.6	30.4	28.3	41.6	87.9
1,1,1-Trichloroethane	956663	3826652	3558786	5231416	11067826
1,1,2-Trichloroethane	295	1180	1097	1613	3413
Trichloroethylene	649	2596	2414	3549	7508
2,4,5-Trichlorophenol	2435	9740	9058	13316	28171
TTHM (Sum of Total Trihalomethanes)	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	24	96.0	89.3	131	278

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life		
Parameter	70%	85%
Aldrin	0.428	0.520
Aluminum	N/A	N/A
Arsenic	49.1	59.6
Cadmium	11.0	13.3
Carbaryl	202	245
Chlordane	0.0050	0.0061
Chlorpyrifos	0.0036	0.0044
Chromium (+3)	N/A	N/A
Chromium (+6)	62.3	75.6
Copper	9.08	11.0
Copper (oyster waters)	N/A	N/A
Cyanide	1.84	2.24
4,4'-DDT	0.0013	0.0015
Demeton	0.126	0.152
Diazinon	0.270	0.327
Dicofol	N/A	N/A
Dieldrin	0.0025	0.0030
Diuron	N/A	N/A
Endosulfan (alpha)	0.011	0.014
Endosulfan (beta)	0.011	0.014
Endosulfan sulfate	0.011	0.014
Endrin	0.003	0.003
Guthion	0.013	0.015
Heptachlor	0.005	0.006
Hexachlorocyclohexane (Lindane)	0.053	0.064
Lead	17.4	21.2
Malathion	0.013	0.015
Mercury	0.691	0.840
Methoxychlor	0.038	0.046
Mirex	0.0013	0.0015
Nickel	16.4	20.0
Nonylphenol	2.13	2.59
Parathion (ethyl)	N/A	N/A
Pentachlorophenol	4.97	6.04
Phenanthrene	2.54	3.08
Polychlorinated Biphenyls (PCBs)	0.038	0.046
Selenium	171	207
Silver, (free ion)	1.53	1.85
Toxaphene	0.00025	0.00030
Tributyltin (TBT)	0.009	0.011
2,4,5 Trichlorophenol	15.1	18.3
Zinc	51.6	62.7

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

Human Health		
Parameter	70%	85%
Acrylonitrile	14.5	17.7
Aldrin	0.0038	0.0046
Anthracene	N/A	N/A
Antimony	4100	4978
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	1964	2384
Benzidine	0.008	0.009
Benzo(a)anthracene	1.26	1.53
Benzo(a)pyrene	1.26	1.53
Bis(chloromethyl)ether	1.68	2.05
Bis(2-chloroethyl)ether	20.2	24.5
Bis(2-ethylhexyl)phthalate	157	191
Bromodichloromethane	1233	1497
Bromoform	8326	10110
Cadmium	N/A	N/A
Carbon Tetrachloride	111	135
Chlordane	0.031	0.038
Chlorobenzene	19909	24175
Chlorodibromomethane (Dibromochloromethane)	915	1111
Chloroform	27343	33202
Chromium (+6)	1922	2333
Chrysene	1252	1520
Cresols	7583	9208
Cyanide	N/A	N/A
4,4'-DDD	0.0119	0.0144
4,4'-DDE	0.0153	0.0186
4,4'-DDT	0.0149	0.0181
2,4'-D	N/A	N/A
Danitol	20.8	25.3
1,2-Dibromoethane	8.15	9.90
m-Dichlorobenzene	5531	6717
o-Dichlorobenzene	16598	20154
p-Dichlorobenzene	N/A	N/A
3,3'-Dichlorobenzidine	1.68	2.05
1,2-Dichloroethane	2117	2570
1,1-Dichloroethylene	91548	111165
Dichloromethane	22684	27545
1,2-Dichloropropane	865	1050
1,3-Dichloropropene (1,3- Dichloropropylene)	808	981
Dicofol	0.291	0.353
Dieldrin	0.0019	0.0023
2,4-Dimethylphenol	2186	2654
Di-n-Butyl Phthalate	11522	13991
Dioxins/Furans (TCDD Equivalents)	3.06E-07	3.72E-07
Endrin	0.766	0.930
Ethylbenzene	27343	33202
Fluoride	N/A	N/A
Heptachlor	0.0057	0.0070
Heptachlor Epoxide	0.0029	0.0035
Hexachlorobenzene	0.017	0.021
Hexachlorobutadiene	1049	1274
Hexachlorocyclohexane (alpha)	0.356	0.432
Hexachlorocyclohexane (beta)	1.26	1.53

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

<i>Parameter</i>	<i>70%</i>	<i>85%</i>
Hexachlorocyclohexane (gamma) (Lindane)	23.7	28.8
Hexachlorocyclopentadiene	N/A	N/A
Hexachloroethane	237	288
Hexachlorophene	0.031	0.037
Lead	38.4	46.7
Mercury	0.047	0.057
Methoxychlor	1.26	1.53
Methyl Ethyl Ketone	5.74E+06	6.97E+06
Nickel	4364	5299
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	1772	2152
N-Nitrosodiethylamine	8.04	9.76
N-Nitroso-di-n-Butylamine	16.1	19.5
Pentachlorobenzene	3.83	4.65
Pentachlorophenol	218	265
Polychlorinated Biphenyls (PCBs)	0.0024	0.0030
Pyridine	7709	9361
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	2.72	3.30
1,1,2,2-Tetrachloroethane	291	353
Tetrachloroethylene	188	228
Thallium	5.74	6.97
Toluene	N/A	N/A
Toxaphene	0.020	0.025
2,4,5-TP (Silvex)	29.1	35.3
1,1,1-Trichloroethane	3661991	4446704
1,1,2-Trichloroethane	1129	1371
Trichloroethylene	2484	3017
2,4,5-Trichlorophenol	9321	11318
TTHM (Sum of Total Trihalomethanes)	N/A	N/A
Vinyl Chloride	91.9	112

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

TEXTTOX MENU #5 - BAY OR WIDE TIDAL RIVER

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2010 Texas Surface Water Quality Standards (30 TAC 307) for Saltwater Aquatic Life

Table 2, 2010 Texas Surface Water Quality Standards for Human Health (except Mercury)

Table 3, 2000 Texas Surface Water Quality Standards for Human Health (Mercury)

"Procedures to Implement the Texas Surface Water Quality Standards," Texas Commission on Environmental Quality, June 2010

PERMIT INFORMATION

Permittee Name:	Shell Oil Company and Deer Park Refining Limited Partnership
TPDES Permit No:	WQ0000403000
Outfall No:	003
Prepared by:	Sunderlin
Date:	12/16/2013

DISCHARGE INFORMATION

Receiving Waterbody:	Houston Ship Channel Tidal
Segment No:	1006
TSS (mg/L):	10
Chloride (mg/L):	2090
Effluent Flow for Aquatic Life (MGD)	< 10 MGD
Percent Effluent for Mixing Zone:	27
Percent Effluent for Zone of Initial Dilution:	100
Oyster Waters:	no
Effluent Flow for Human Health (MGD):	< 10 MGD
Percent Effluent for Human Health:	14

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

<i>Estuarine Metal</i>	<i>Intercept (b)</i>	<i>Slope (m)</i>	<i>Partition Coefficient (Kp)</i>	<i>Dissolved Fraction (Cd/Ct)</i>		<i>Water Effect Ratio (WER)</i>	
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Cadmium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (Total)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (+3)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Chromium (+6)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	4.85	-0.72	13489.63	0.88		1.80	30 TAC 307
Lead	6.06	-0.85	162181.01	0.3814159		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	5.86	-0.74	131825.67	0.43		1.00	Assumed
Zinc	5.36	-0.52	69183.10	0.59		1.00	Assumed

CONVERT TISSUE-BASED CRITERIA TO WATER COLUMN CRITERIA:

<i>Parameter</i>	<i>Fish Only Criterion (ug/kg)</i>	<i>BCF (l/kg)</i>	<i>Fish Only Criterion (ug/L)</i>
4,4'-DDD	166.16	53600	0.0031
4,4'-DDE	214.4	53600	0.004
4,4'-DDT	209.04	53600	0.0039
Dioxins/Furans	0.0004	5000	8.00E-08
Mercury			
Polychlorinated Biphenyls (PCBs)	19.96	31200	6.40E-04

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

<i>Parameter</i>	<i>SW Acute Criterion (ug/L)</i>	<i>SW Chronic Criterion (ug/L)</i>	<i>WLAa</i>	<i>WLAc</i>	<i>LTAa</i>	<i>LTAc</i>	<i>Daily Avg. (ug/L)</i>	<i>Daily Max. (ug/L)</i>
Aldrin	1.3	N/A	1.30	N/A	0.42	N/A	0.61	1.29
Aluminum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic	149	78	149	289	47.7	176	70.1	148
Cadmium	40	8.75	40.0	32.4	12.8	19.8	18.8	39.8
Carbaryl	613	N/A	613	N/A	196	N/A	288	610
Chlordane	0.09	0.004	0.090	0.015	0.029	0.009	0.013	0.028
Chlorpyrifos	0.011	0.006	0.011	0.022	0.004	0.014	0.005	0.011
Chromium (+3)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium (+6)	1090	49.6	1090	184	349	112	165	349
Copper	24.3	6.48	27.6	27.2	8.82	16.6	13.0	27.4
Copper (oyster waters)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide	5.6	5.6	5.60	20.7	1.79	12.7	2.63	5.57
4,4'-DDT	0.13	0.001	0.130	0.0037	0.042	0.0023	0.0033	0.0070
Demeton	N/A	0.1	N/A	0.37	N/A	0.23	0.33	0.70
Diazinon	0.819	0.819	0.82	3.03	0.26	1.85	0.39	0.82
Dicofol	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dieldrin	0.71	0.002	0.710	0.007	0.227	0.005	0.007	0.014
Diuron	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Endosulfan I (alpha)	0.034	0.009	0.034	0.033	0.011	0.020	0.016	0.034
Endosulfan II (beta)	0.034	0.009	0.034	0.033	0.011	0.020	0.016	0.034
Endosulfan sulfate	0.034	0.009	0.034	0.033	0.011	0.020	0.016	0.034
Endrin	0.037	0.002	0.037	0.007	0.012	0.005	0.007	0.014
Guthion	N/A	0.01	N/A	0.037	N/A	0.023	0.033	0.070
Heptachlor	0.053	0.004	0.053	0.015	0.017	0.009	0.013	0.028
Hexachlorocyclohexane (Lindane)	0.16	N/A	0.160	N/A	0.051	N/A	0.075	0.159
Lead	133	5.3	349	51.5	112	31.4	46.1	97.6
Malathion	N/A	0.01	N/A	0.037	N/A	0.023	0.033	0.070
Mercury	2.1	1.1	2.1	4.07	0.67	2.49	0.99	2.09
Methoxychlor	N/A	0.03	N/A	0.1111	N/A	0.0678	0.0996	0.211
Mirex	N/A	0.001	N/A	0.0037	N/A	0.0023	0.0033	0.0070
Nickel	118	13.1	118	48.5	37.8	29.6	43.5	92.0
Nonylphenol	7	1.7	7.00	6.30	2.24	3.84	3.29	6.97
Parathion (ethyl)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pentachlorophenol	15.1	9.6	15.1	35.6	4.83	21.7	7.10	15.0
Phenanthrene	7.7	4.6	7.70	17.0	2.46	10.4	3.62	7.66
Polychlorinated Biphenyls (PCBs)	10	0.03	10.0	0.11	3.20	0.07	0.10	0.21
Selenium	564	136	564	504	180	307	265	561
Silver (free ion)	2	N/A	4.64	N/A	1.48	N/A	2.18	4.61
Toxaphene	0.21	0.0002	0.210	0.00074	0.067	0.00045	0.00066	0.00141
Tributyltin (TBT)	0.24	0.0074	0.240	0.027	0.077	0.017	0.025	0.052
2,4,5 Trichlorophenol	259	12	259	44.4	82.9	27.1	39.9	84.3
Zinc	92.7	84.2	157	528	50.2	322	73.8	156

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

HUMAN HEALTH

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

<i>Parameter</i>	<i>Fish Only Criterion (ug/L)</i>	<i>WLAh</i>	<i>LTAh</i>	<i>Daily Avg. (ug/L)</i>	<i>Daily Max. (ug/L)</i>
Acrylonitrile	3.8	27.1	25.2	37.1	78.5
Aldrin	0.001	0.0071	0.0066	0.0098	0.0207
Anthracene	N/A	N/A	N/A	N/A	N/A
Antimony	1071	7650	7115	10458	22126
Arsenic	N/A	N/A	N/A	N/A	N/A
Barium	N/A	N/A	N/A	N/A	N/A
Benzene	513	3664	3408	5009	10598
Benzidine	0.002	0.014	0.013	0.020	0.041
Benzo(a)anthracene	0.33	2.36	2.19	3.22	6.82
Benzo(a)pyrene	0.33	2.36	2.19	3.22	6.82
Bis(chloromethyl)ether	0.44	3.14	2.92	4.30	9.09
Bis(2-chloroethyl)ether	5.27	37.6	35.0	51.5	109
Bis(2-ethylhexyl)phthalate	41	293	272	400	847
Bromodichloromethane	322	2300	2139	3144	6652
Bromoform	2175	15536	14448	21239	44934
Cadmium	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	29	207	193	283	599
Chlordane	0.0081	0.0579	0.0538	0.0791	0.167
Chlorobenzene	5201	37150	34550	50788	107449
Chlorodibromomethane (Dibromochloromethane)	239	1707	1588	2334	4938
Chloroform	7143	51021	47450	69751	147569
Chromium (+6)	502	3586	3335	4902	10371
Chrysene	327	2336	2172	3193	6756
Cresols	1981	14150	13160	19344	40926
Cyanide	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.0031	0.0221	0.0206	0.0303	0.0640
4,4'-DDE	0.004	0.0286	0.0266	0.0391	0.0826
4,4'-DDT	0.0039	0.0279	0.0259	0.0381	0.0806
2,4'-D	N/A	N/A	N/A	N/A	N/A
Danitol	5.44	38.9	36.1	53.1	112.4
1,2-Dibromoethane	2.13	15.21	14.15	20.8	44.0
m-Dichlorobenzene	1445	10321	9599	14110	29853
o-Dichlorobenzene	4336	30971	28803	42341	89579
p-Dichlorobenzene	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	0.44	3.14	2.92	4.30	9.09
1,2-Dichloroethane	553	3950	3674	5400	11425
1,1-Dichloroethylene	23916	170829	158871	233540	494087
Dichloromethane	5926	42329	39366	57867	122427
1,2-Dichloropropane	226	1614	1501	2207	4669
1,3-Dichloropropene (1,3- Dichloropropylene)	211	1507	1402	2060	4359
Dicofol	0.076	0.543	0.505	0.742	1.57
Dieldrin	0.0005	0.0036	0.0033	0.0049	0.0103
2,4-Dimethylphenol	571	4079	3793	5576	11796
Di-n-Butyl Phthalate	3010	21500	19995	29393	62184
Dioxins/Furans (TCDD Equivalents)	8.00E-08	5.71E-07	5.31E-07	7.81E-07	1.65E-06
Endrin	0.2	1.43	1.33	1.95	4.13
Ethylbenzene	7143	51021	47450	69751	147569
Fluoride	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.0015	0.0107	0.0100	0.0146	0.0310
Heptachlor Epoxide	0.00075	0.0054	0.0050	0.0073	0.0155
Hexachlorobenzene	0.0045	0.0321	0.0299	0.0439	0.0930
Hexachlorobutadiene	274	1957	1820	2676	5661

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

<i>Parameter</i>	<i>Fish Only Criterion (ug/L)</i>	<i>WLAh</i>	<i>LTAh</i>	<i>Daily Avg. (ug/L)</i>	<i>Daily Max. (ug/L)</i>
Hexachlorocyclohexane (alpha)	0.093	0.664	0.618	0.908	1.92
Hexachlorocyclohexane (beta)	0.33	2.36	2.19	3.22	6.82
Hexachlorocyclohexane (gamma) (Lindane)	6.2	44.3	41.2	60.5	128
Hexachlorocyclopentadiene	N/A	N/A	N/A	N/A	N/A
Hexachloroethane	62	443	412	605	1281
Hexachlorophene	0.008	0.0571	0.0531	0.0781	0.1653
Lead	3.83	71.7	66.7	98.1	207
Mercury	0.0122	0.087	0.081	0.119	0.252
Methoxychlor	0.33	2.36	2.19	3.22	6.82
Methyl Ethyl Ketone	1500000	1.07E+07	9.96E+06	1.46E+07	3.10E+07
Nickel	1140	8143	7573	11132	23552
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	463	3307	3076	4521	9565
N-Nitrosodiethylamine	2.1	15.0	14.0	20.5	43.4
N-Nitroso-di-n-Butylamine	4.2	30.0	27.9	41.0	86.8
Pentachlorobenzene	1	7.14	6.64	9.77	20.7
Pentachlorophenol	57	407	379	557	1178
Polychlorinated Biphenyls (PCBs)	6.40E-04	0.0046	0.0042	0.0062	0.0132
Pyridine	2014	14386	13379	19667	41608
Selenium	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.71	5.07	4.72	6.93	14.7
1,1,2,2-Tetrachloroethane	76	543	505	742	1570
Tetrachloroethylene	49	350	326	478	1012
Thallium	1.5	10.71	9.96	14.6	31.0
Toluene	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.0053	0.038	0.035	0.052	0.109
2,4,5-TP (Silvex)	7.6	54.3	50.5	74.2	157
1,1,1-Trichloroethane	956663	6833307	6354976	9341814	19763974
1,1,2-Trichloroethane	295	2107	1960	2881	6094
Trichloroethylene	649	4636	4311	6337	13408
2,4,5-Trichlorophenol	2435	17393	16175	23778	50305
TTHM (Sum of Total Trihalomethanes)	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	24	171	159	234	496

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life		
Parameter	70%	85%
Aldrin	0.428	0.520
Aluminum	N/A	N/A
Arsenic	49.1	59.6
Cadmium	13.2	16.0
Carbaryl	202	245
Chlordane	0.0093	0.0113
Chlorpyrifos	0.0036	0.0044
Chromium (+3)	N/A	N/A
Chromium (+6)	115	140
Copper	9.08	11.0
Copper (oyster waters)	N/A	N/A
Cyanide	1.84	2.24
4,4'-DDT	0.0023	0.0028
Demeton	0.232	0.282
Diazinon	0.270	0.327
Dicofol	N/A	N/A
Dieldrin	0.0046	0.0056
Diuron	N/A	N/A
Endosulfan (alpha)	0.011	0.014
Endosulfan (beta)	0.011	0.014
Endosulfan sulfate	0.011	0.014
Endrin	0.005	0.006
Guthion	0.023	0.028
Heptachlor	0.009	0.011
Hexachlorocyclohexane (Lindane)	0.053	0.064
Lead	32.3	39.2
Malathion	0.023	0.028
Mercury	0.691	0.840
Methoxychlor	0.070	0.085
Mirex	0.0023	0.0028
Nickel	30.5	37.0
Nonylphenol	2.30	2.80
Parathion (ethyl)	N/A	N/A
Pentachlorophenol	4.97	6.04
Phenanthrene	2.54	3.08
Polychlorinated Biphenyls (PCBs)	0.070	0.085
Selenium	186	226
Silver, (free ion)	1.53	1.85
Toxaphene	0.00046	0.00056
Tributyltin (TBT)	0.017	0.021
2,4,5 Trichlorophenol	27.9	33.9
Zinc	51.6	62.7

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

Human Health

Parameter	70%	85%
Acrylonitrile	26.0	31.5
Aldrin	0.0068	0.0083
Anthracene	N/A	N/A
Antimony	7321	8890
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	3507	4258
Benzidine	0.014	0.017
Benzo(a)anthracene	2.26	2.74
Benzo(a)pyrene	2.26	2.74
Bis(chloromethyl)ether	3.01	3.65
Bis(2-chloroethyl)ether	36.0	43.7
Bis(2-ethylhexyl)phthalate	280	340
Bromodichloromethane	2201	2673
Bromoform	14867	18053
Cadmium	N/A	N/A
Carbon Tetrachloride	198	241
Chlordane	0.055	0.067
Chlorobenzene	35551	43170
Chlorodibromomethane (Dibromochloromethane)	1634	1984
Chloroform	48826	59289
Chromium (+6)	3431	4167
Chrysene	2235	2714
Cresols	13541	16443
Cyanide	N/A	N/A
4,4'-DDD	0.0212	0.0257
4,4'-DDE	0.0273	0.0332
4,4'-DDT	0.0267	0.0324
2,4'-D	N/A	N/A
Danitol	37.2	45.2
1,2-Dibromoethane	14.6	17.7
m-Dichlorobenzene	9877	11994
o-Dichlorobenzene	29639	35990
p-Dichlorobenzene	N/A	N/A
3,3'-Dichlorobenzidine	3.01	3.65
1,2-Dichloroethane	3780	4590
1,1-Dichloroethylene	163478	198509
Dichloromethane	40507	49187
1,2-Dichloropropane	1545	1876
1,3-Dichloropropene (1,3- Dichloropropylene)	1442	1751
Dicofol	0.519	0.631
Dieldrin	0.0034	0.0042
2,4-Dimethylphenol	3903	4739
Di-n-Butyl Phthalate	20575	24984
Dioxins/Furans (TCDD Equivalents)	5.47E-07	6.64E-07
Endrin	1.37	1.66
Ethylbenzene	48826	59289
Fluoride	N/A	N/A
Heptachlor	0.0103	0.0125
Heptachlor Epoxide	0.0051	0.0062
Hexachlorobenzene	0.031	0.037
Hexachlorobutadiene	1873	2274
Hexachlorocyclohexane (alpha)	0.636	0.772
Hexachlorocyclohexane (beta)	2.26	2.74

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

<i>Parameter</i>	<i>70%</i>	<i>85%</i>
Hexachlorocyclohexane (gamma) (Lindane)	42.4	51.5
Hexachlorocyclopentadiene	N/A	N/A
Hexachloroethane	424	515
Hexachlorophene	0.055	0.066
Lead	68.6	83.3
Mercury	0.083	0.101
Methoxychlor	2.26	2.74
Methyl Ethyl Ketone	1.03E+07	1.25E+07
Nickel	7792	9462
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	3165	3843
N-Nitrosodiethylamine	14.35	17.43
N-Nitroso-di-n-Butylamine	28.7	34.9
Pentachlorobenzene	6.84	8.30
Pentachlorophenol	390	473
Polychlorinated Biphenyls (PCBs)	0.0044	0.0053
Pyridine	13767	16717
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	4.85	5.89
1,1,2,2-Tetrachloroethane	519	631
Tetrachloroethylene	335	407
Thallium	10.3	12.5
Toluene	N/A	N/A
Toxaphene	0.036	0.044
2,4,5-TP (Silvex)	51.9	63.1
1,1,1-Trichloroethane	6539270	7940542
1,1,2-Trichloroethane	2016	2449
Trichloroethylene	4436	5387
2,4,5-Trichlorophenol	16644	20211
TTHM (Sum of Total Trihalomethanes)	N/A	N/A
Vinyl Chloride	164	199

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

TEXTOX MENU #5 - BAY OR WIDE TIDAL RIVER

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2010 Texas Surface Water Quality Standards (30 TAC 307) for Saltwater Aquatic Life

Table 2, 2010 Texas Surface Water Quality Standards for Human Health (except Mercury)

Table 3, 2000 Texas Surface Water Quality Standards for Human Health (Mercury)

"Procedures to Implement the Texas Surface Water Quality Standards," Texas Commission on Environmental Quality, June 2010

PERMIT INFORMATION

Permittee Name:	Shell Oil Company and Deer Park Refining Limited Partnership
TPDES Permit No:	WQ0000403000
Outfall No:	007
Prepared by:	Sunderlin
Date:	12/16/2013

DISCHARGE INFORMATION

Receiving Waterbody:	Houston Ship Channel Tidal
Segment No:	1006
TSS (mg/L):	10
Chloride (mg/L):	2090
Effluent Flow for Aquatic Life (MGD)	< 10 MGD
Percent Effluent for Mixing Zone:	8
Percent Effluent for Zone of Initial Dilution:	30
Oyster Waters:	no
Effluent Flow for Human Health (MGD):	< 10 MGD
Percent Effluent for Human Health:	4

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

<i>Estuarine Metal</i>	<i>Intercept (b)</i>	<i>Slope (m)</i>	<i>Partition Coefficient (Kp)</i>	<i>Dissolved Fraction (Cd/Ct)</i>	<i>Water Effect Ratio (WER)</i>	
Aluminum	N/A	N/A	N/A	1.00	Assumed	Assumed
Arsenic	N/A	N/A	N/A	1.00	Assumed	Assumed
Cadmium	N/A	N/A	N/A	1.00	Assumed	Assumed
Chromium (Total)	N/A	N/A	N/A	1.00	Assumed	Assumed
Chromium (+3)	N/A	N/A	N/A	1.00	Assumed	Assumed
Chromium (+6)	N/A	N/A	N/A	1.00	Assumed	Assumed
Copper	4.85	-0.72	13489.63	0.88	1.80	30 TAC 307
Lead	6.06	-0.85	162181.01	0.3814159	1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	Assumed
Nickel	N/A	N/A	N/A	1.00	Assumed	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	Assumed
Silver	5.86	-0.74	131825.67	0.43	1.00	Assumed
Zinc	5.36	-0.52	69183.10	0.59	1.00	Assumed

CONVERT TISSUE-BASED CRITERIA TO WATER COLUMN CRITERIA:

<i>Parameter</i>	<i>Fish Only Criterion (ug/kg)</i>	<i>BCF (l/kg)</i>	<i>Fish Only Criterion (ug/L)</i>
4,4'-DDD	166.16	53600	0.0031
4,4'-DDE	214.4	53600	0.004
4,4'-DDT	209.04	53600	0.0039
Dioxins/Furans	0.0004	5000	8.00E-08
Mercury			
Polychlorinated Biphenyls (PCBs)	19.96	31200	6.40E-04

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

<i>Parameter</i>	<i>SW Acute Criterion (ug/L)</i>	<i>SW Chronic Criterion (ug/L)</i>	<i>WLAa</i>	<i>WLAc</i>	<i>LTAa</i>	<i>LTAc</i>	<i>Daily Avg. (ug/L)</i>	<i>Daily Max. (ug/L)</i>
Aldrin	1.3	N/A	4.33	N/A	1.39	N/A	2.04	4.31
Aluminum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic	149	78	497	975	159	595	234	494
Cadmium	40	8.75	133	109	42.7	66.7	62.7	133
Carbaryl	613	N/A	2043	N/A	654	N/A	961	2034
Chlordane	0.09	0.004	0.300	0.050	0.096	0.031	0.045	0.095
Chlorpyrifos	0.011	0.006	0.037	0.075	0.012	0.046	0.017	0.036
Chromium (+3)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium (+6)	1090	49.6	3633	620	1163	378	556	1176
Copper	24.3	6.48	91.9	91.9	29.4	56.1	43.2	91.5
Copper (oyster waters)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanide	5.6	5.6	18.7	70.0	5.97	42.7	8.78	18.6
4,4'-DDT	0.13	0.001	0.433	0.0125	0.139	0.0076	0.0112	0.0237
Demeton	N/A	0.1	N/A	1.25	N/A	0.76	1.12	2.37
Diazinon	0.819	0.819	2.73	10.2	0.87	6.24	1.28	2.72
Dicofol	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dieldrin	0.71	0.002	2.37	0.025	0.757	0.015	0.022	0.047
Diuron	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Endosulfan I (alpha)	0.034	0.009	0.113	0.113	0.036	0.069	0.053	0.113
Endosulfan II (beta)	0.034	0.009	0.113	0.113	0.036	0.069	0.053	0.113
Endosulfan sulfate	0.034	0.009	0.113	0.113	0.036	0.069	0.053	0.113
Endrin	0.037	0.002	0.123	0.025	0.039	0.015	0.022	0.047
Guthion	N/A	0.01	N/A	0.125	N/A	0.076	0.112	0.237
Heptachlor	0.053	0.004	0.177	0.050	0.057	0.031	0.045	0.095
Hexachlorocyclohexane (Lindane)	0.16	N/A	0.533	N/A	0.171	N/A	0.251	0.531
Lead	133	5.3	1162	174	372	106	156	330
Malathion	N/A	0.01	N/A	0.125	N/A	0.076	0.112	0.237
Mercury	2.1	1.1	7.0	13.75	2.24	8.39	3.29	6.97
Methoxychlor	N/A	0.03	N/A	0.3750	N/A	0.2288	0.3363	0.711
Mirex	N/A	0.001	N/A	0.0125	N/A	0.0076	0.0112	0.0237
Nickel	118	13.1	393	164	126	99.9	147	311
Nonylphenol	7	1.7	23.3	21.3	7.47	13.0	11.0	23.2
Parathion (ethyl)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pentachlorophenol	15.1	9.6	50.3	120	16.1	73.2	23.7	50.1
Phenanthrene	7.7	4.6	25.7	57.5	8.21	35.1	12.1	25.5
Polychlorinated Biphenyls (PCBs)	10	0.03	33.3	0.38	10.67	0.23	0.34	0.71
Selenium	564	136	1880	1700	602	1037	884	1871
Silver (free ion)	2	N/A	15.46	N/A	4.95	N/A	7.27	15.38
Toxaphene	0.21	0.0002	0.700	0.00250	0.224	0.00153	0.00224	0.00474
Tributyltin (TBT)	0.24	0.0074	0.800	0.093	0.256	0.056	0.083	0.175
2,4,5 Trichlorophenol	259	12	863	150	276	91.5	135	285
Zinc	92.7	84.2	523	1781	167	1086	246	520

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

HUMAN HEALTH

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

<i>Parameter</i>	<i>Fish Only Criterion (ug/L)</i>	<i>WLAh</i>	<i>LTAh</i>	<i>Daily Avg. (ug/L)</i>	<i>Daily Max. (ug/L)</i>
Acrylonitrile	3.8	95.0	88.4	130	275
Aldrin	0.001	0.0250	0.0233	0.0342	0.0723
Anthracene	N/A	N/A	N/A	N/A	N/A
Antimony	1071	26775	24901	36604	77441
Arsenic	N/A	N/A	N/A	N/A	N/A
Barium	N/A	N/A	N/A	N/A	N/A
Benzene	513	12825	11927	17533	37094
Benzidine	0.002	0.050	0.047	0.068	0.145
Benzo(a)anthracene	0.33	8.25	7.67	11.28	23.86
Benzo(a)pyrene	0.33	8.25	7.67	11.28	23.86
Bis(chloromethyl)ether	0.44	11.00	10.23	15.04	31.82
Bis(2-chloroethyl)ether	5.27	132	123	180	381
Bis(2-ethylhexyl)phthalate	41	1025	953	1401	2965
Bromodichloromethane	322	8050	7487	11005	23283
Bromoform	2175	54375	50569	74336	157269
Cadmium	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	29	725	674	991	2097
Chlordane	0.0081	0.2025	0.1883	0.2768	0.586
Chlorobenzene	5201	130025	120923	177757	376071
Chlorodibromomethane (Dibromochloromethane)	239	5975	5557	8168	17281
Chloroform	7143	178575	166075	244130	516492
Chromium (+6)	502	12550	11672	17157	36298
Chrysene	327	8175	7603	11176	23645
Cresols	1981	49525	46058	67706	143241
Cyanide	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.0031	0.0775	0.0721	0.1060	0.2242
4,4'-DDE	0.004	0.1000	0.0930	0.1367	0.2892
4,4'-DDT	0.0039	0.0975	0.0907	0.1333	0.2820
2,4'-D	N/A	N/A	N/A	N/A	N/A
Danitrol	5.44	136	126	186	393
1,2-Dibromoethane	2.13	53.3	49.5	72.8	154
m-Dichlorobenzene	1445	36125	33596	49386	104484
o-Dichlorobenzene	4336	108400	100812	148194	313525
p-Dichlorobenzene	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	0.44	11.0	10.2	15.0	31.8
1,2-Dichloroethane	553	13825	12857	18900	39986
1,1-Dichloroethylene	23916	597900	556047	817389	1729306
Dichloromethane	5926	148150	137780	202536	428494
1,2-Dichloropropane	226	5650	5255	7724	16341
1,3-Dichloropropene (1,3- Dichloropropylene)	211	5275	4906	7211	15257
Dicofol	0.076	1.90	1.77	2.60	5.50
Dieldrin	0.0005	0.0125	0.0116	0.0171	0.0362
2,4-Dimethylphenol	571	14275	13276	19515	41288
Di-n-Butyl Phthalate	3010	75250	69983	102874	217646
Dioxins/Furans (TCDD Equivalents)	8.00E-08	2.00E-06	1.86E-06	2.73E-06	5.78E-06
Endrin	0.2	5.00	4.65	6.84	14.5
Ethylbenzene	7143	178575	166075	244130	516492
Fluoride	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.0015	0.0375	0.0349	0.0513	0.1085
Heptachlor Epoxide	0.00075	0.0188	0.0174	0.0256	0.0542
Hexachlorobenzene	0.0045	0.1125	0.1046	0.1538	0.3254

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

<i>Parameter</i>	<i>Fish Only Criterion (ug/L)</i>	<i>WLAh</i>	<i>LTAh</i>	<i>Daily Avg. (ug/L)</i>	<i>Daily Max. (ug/L)</i>
Hexachlorobutadiene	274	6850	6371	9365	19812
Hexachlorocyclohexane (alpha)	0.093	2.33	2.16	3.18	6.72
Hexachlorocyclohexane (beta)	0.33	8.25	7.67	11.3	23.9
Hexachlorocyclohexane (gamma) (Lindane)	6.2	155	144	212	448
Hexachlorocyclopentadiene	N/A	N/A	N/A	N/A	N/A
Hexachloroethane	62	1550	1442	2119	4483
Hexachlorophene	0.008	0.2000	0.1860	0.2734	0.5785
Lead	3.83	251	233	343	726
Mercury	0.0122	0.305	0.284	0.417	0.882
Methoxychlor	0.33	8.25	7.67	11.3	23.9
Methyl Ethyl Ketone	1500000	3.75E+07	3.49E+07	5.13E+07	1.08E+08
Nickel	1140	28500	26505	38962	82431
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	463	11575	10765	15824	33478
N-Nitrosodiethylamine	2.1	52.5	48.8	71.8	152
N-Nitroso-di-n-Butylamine	4.2	105	97.7	144	304
Pentachlorobenzene	1	25.0	23.3	34.2	72.3
Pentachlorophenol	57	1425	1325	1948	4122
Polychlorinated Biphenyls (PCBs)	6.40E-04	0.0160	0.0149	0.0219	0.0463
Pyridine	2014	50350	46826	68833	145627
Selenium	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.71	17.8	16.5	24.3	51.3
1,1,2,2-Tetrachloroethane	76	1900	1767	2597	5495
Tetrachloroethylene	49	1225	1139	1675	3543
Thallium	1.5	37.5	34.9	51.3	108
Toluene	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.0053	0.133	0.123	0.181	0.383
2,4,5-TP (Silvex)	7.6	190	177	260	550
1,1,1-Trichloroethane	956663	23916575	22242415	32696350	69173910
1,1,2-Trichloroethane	295	7375	6859	10082	21331
Trichloroethylene	649	16225	15089	22181	46928
2,4,5-Trichlorophenol	2435	60875	56614	83222	176069
TTHM (Sum of Total Trihalomethanes)	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	24	600	558	820	1735

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life		
Parameter	70%	85%
Aldrin	1.43	1.73
Aluminum	N/A	N/A
Arsenic	164	199
Cadmium	43.9	53.3
Carbaryl	673	817
Chlordane	0.0314	0.0381
Chlorpyrifos	0.0121	0.0147
Chromium (+3)	N/A	N/A
Chromium (+6)	389	473
Copper	30.3	36.8
Copper (oyster waters)	N/A	N/A
Cyanide	6.15	7.46
4,4'-DDT	0.0078	0.0095
Demeton	0.785	0.953
Diazinon	0.899	1.092
Dicofol	N/A	N/A
Dieldrin	0.0157	0.0191
Diuron	N/A	N/A
Endosulfan (alpha)	0.037	0.045
Endosulfan (beta)	0.037	0.045
Endosulfan sulfate	0.037	0.045
Endrin	0.016	0.019
Guthion	0.078	0.095
Heptachlor	0.031	0.038
Hexachlorocyclohexane (Lindane)	0.176	0.213
Lead	109	132
Malathion	0.078	0.095
Mercury	2.30	2.80
Methoxychlor	0.235	0.286
Mirex	0.0078	0.0095
Nickel	103	125
Nonylphenol	7.68	9.33
Parathion (ethyl)	N/A	N/A
Pentachlorophenol	16.6	20.1
Phenanthrene	8.45	10.3
Polychlorinated Biphenyls (PCBs)	0.235	0.286
Selenium	619	752
Silver, (free ion)	5.09	6.18
Toxaphene	0.00157	0.00191
Tributyltin (TBT)	0.058	0.071
2,4,5 Trichlorophenol	94.2	114
Zinc	172	209

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

Human Health		
Parameter	70%	85%
Acrylonitrile	90.9	110
Aldrin	0.0239	0.0291
Anthracene	N/A	N/A
Antimony	25623	31113
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	12273	14903
Benzidine	0.048	0.058
Benzo(a)anthracene	7.90	9.59
Benzo(a)pyrene	7.90	9.59
Bis(chloromethyl)ether	10.5	12.8
Bis(2-chloroethyl)ether	126	153
Bis(2-ethylhexyl)phthalate	981	1191
Bromodichloromethane	7704	9354
Bromoform	52035	63186
Cadmium	N/A	N/A
Carbon Tetrachloride	694	842
Chlordane	0.194	0.235
Chlorobenzene	124430	151094
Chlorodibromomethane (Dibromochloromethane)	5718	6943
Chloroform	170891	207510
Chromium (+6)	12010	14584
Chrysene	7823	9500
Cresols	47394	57550
Cyanide	N/A	N/A
4,4'-DDD	0.0742	0.0901
4,4'-DDE	0.0957	0.1162
4,4'-DDT	0.0933	0.1133
2,4'-D	N/A	N/A
Danitol	130	158
1,2-Dibromoethane	51.0	61.9
m-Dichlorobenzene	34571	41979
o-Dichlorobenzene	103736	125965
p-Dichlorobenzene	N/A	N/A
3,3'-Dichlorobenzidine	10.53	12.78
1,2-Dichloroethane	13230	16065
1,1-Dichloroethylene	572172	694781
Dichloromethane	141775	172155
1,2-Dichloropropane	5407	6565
1,3-Dichloropropene (1,3- Dichloropropylene)	5048	6130
Dicofol	1.82	2.21
Dieldrin	0.0120	0.0145
2,4-Dimethylphenol	13661	16588
Di-n-Butyl Phthalate	72012	87443
Dioxins/Furans (TCDD Equivalents)	1.91E-06	2.32E-06
Endrin	4.78	5.81
Ethylbenzene	170891	207510
Fluoride	N/A	N/A
Heptachlor	0.0359	0.0436
Heptachlor Epoxide	0.0179	0.0218
Hexachlorobenzene	0.108	0.131
Hexachlorobutadiene	6555	7960
Hexachlorocyclohexane (alpha)	2.22	2.70
Hexachlorocyclohexane (beta)	7.90	9.59

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

<i>Parameter</i>	<i>70%</i>	<i>85%</i>
Hexachlorocyclohexane (gamma) (Lindane)	148	180
Hexachlorocyclopentadiene	N/A	N/A
Hexachloroethane	1483	1801
Hexachlorophene	0.191	0.232
Lead	240	292
Mercury	0.292	0.354
Methoxychlor	7.90	9.59
Methyl Ethyl Ketone	3.59E+07	4.36E+07
Nickel	27274	33118
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	11077	13451
N-Nitrosodiethylamine	50.2	61.0
N-Nitroso-di-n-Butylamine	100	122
Pentachlorobenzene	23.9	29.1
Pentachlorophenol	1364	1656
Polychlorinated Biphenyls (PCBs)	0.0153	0.0186
Pyridine	48183	58508
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	17.0	20.6
1,1,2,2-Tetrachloroethane	1818	2208
Tetrachloroethylene	1172	1423
Thallium	35.9	43.6
Toluene	N/A	N/A
Toxaphene	0.127	0.154
2,4,5-TP (Silvex)	182	221
1,1,1-Trichloroethane	22887445	27791897
1,1,2-Trichloroethane	7058	8570
Trichloroethylene	15527	18854
2,4,5-Trichlorophenol	58256	70739
TTHM (Sum of Total Trihalomethanes)	N/A	N/A
Vinyl Chloride	574	697

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

Mass effluent limitations are calculated as follows:

$$\text{Mass (lbs/day)} = [\text{conc (ug/L)/1000}] * [9.25 \text{ MGD}] * [8.345]$$

POLLUTANT	Dly Avg ug/l	Dly Max ug/l		Dly Avg lbs/day	Dly Max lbs/day
Chromium (Hexavalent)	556	1176		42.9	90.8
Copper (Total)	43.2	91.5		3.33	7.06
Nickel (Total)	147	311		11.3	24.0
Acrylonitrile	130	275		10.0	21.2
Benzene	17533	37094		1353	2863
Benzo(a)anthracene	11.28	23.86		0.871	1.842
Benzo(a)pyrene	11.28	23.86		0.871	1.84
Bis(2-ethylhexyl)phthalate	1401	2965		108	229
Carbon Tetrachloride	991	2097		76.5	161.9
Chlorobenzene	177757	376071		13721	29029
Chloroform	244130	516492		18845	39869
Chrysene	11176	23645		863	1825
m-Dichlorobenzene	49386	104484		3812	8065
o-Dichlorobenzene	148194	313525		11439	24201
1,2-Dichloroethane	18900	39986		1459	3087
1,1-Dichloroethylene	817389	1729306		63095	133487
1,2-Dichloropropane	7724	16341		596	1261
1,3-Dichloropropene (1,3-Dichloropropylene)	7211	15257		557	1178
2,4-Dimethylphenol	19515	41288		1506	3187
Di-n-Butyl Phthalate	102874	217646		7941	16800
Ethylbenzene	244130	516492		18845	39869
Hexachlorobenzene	0.1538	0.3254		0.0119	0.0251
Hexachlorobutadiene	9365	19812		723	1529
Hexachloroethane	2119	4483		164	346
Nitrobenzene	15824	33478		1221	2584
Phenanthrene	12.1	25.5		0.934	1.97
Tetrachloroethylene	1675	3543		129	273
1,1,1-Trichloroethane	32696350	69173910		2523872	5339621
1,1,2-Trichloroethane	10082	21331		778	1647
Trichloroethylene	22181	46928		1712	3622
Vinyl Chloride	820	1735		63.3	134

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

Appendix C
Comparison of Technology-Based Effluent Limits and Water Quality-Based Effluent Limits

The following table is a summary of technology based effluent limitations calculated/assessed in the draft permit (Technology Based), effluent limitations from the current permit (Current Permit), and calculated/assessed water quality based effluent limitations (Water Quality).

Outfall	Parameter	Current Permit		WQ Based		Tech Based	
		Dly Avg Lbs/day	Dly Max Lbs/day	Dly Avg Lbs/day	Dly Max Lbs/day	Dly Avg Lbs/day	Dly Max Lbs/day
002	Flow	Report (MGD)	Report (MGD)	----	----	----	----
	Total Organic Carbon	----	70 mg/L	----	----	----	----
	Oil and Grease	----	15 mg/L	----	----	----	----
	Copper, Total	----	Report (mg/L)	----	----	----	----
	pH	6.0 su (min)	9.0 su	----	----	----	----
003	Flow	Report (MGD)	Report (MGD)	----	----	----	----
	Total Organic Carbon	----	70 mg/L	----	----	----	----
	Oil and Grease	----	15 mg/L	----	----	----	----
	pH	6.0 su (min)	9.0 su	----	----	----	----
004	Flow	Report (MGD)	Report (MGD)	----	----	----	----
	Total Organic Carbon	----	70 mg/L	----	----	----	----
	Oil and Grease	----	15 mg/L	----	----	----	----
	Copper, Total	----	Report (mg/L)	----	----	----	----
	pH	6.0 su (min)	9.0 su	----	----	----	----
006	Flow	Report (MGD)	Report (MGD)	----	----	----	----
	Total Organic Carbon	----	70 mg/L	----	----	----	----
	Oil and Grease	----	15 mg/L	----	----	----	----
	pH	6.0 su (min)	9.0 su	----	----	----	----
007	Flow	9.25 MGD	14.0 MGD	----	----	----	----
	Biochemical Oxygen Demand (5-day)	1410	2820	1410	2820	3272	5917
	Total Suspended Solids	1980	2970	----	----	2628	4130
	Total Organic Carbon	3000	6000	----	----	8644	16728
	Oil and Grease	660	990	----	----	952	1790
	Phenols	12	20	----	----	20.4	42.0
	Ammonia as Nitrogen	500	1580	500	1580	1568	3449
	Sulfides	10	20	----	----	15.2	34.0
	Chromium, Total	22	44	----	----	30.3	84.1
	Chromium, Hexavalent	2.1	4.7	42.9	90.8	2.57	5.78
	Temperature	----	105 ° F	----	----	----	----
	Dioxin/Furans (TEQ)	----	Report (ppq)	----	----	----	----
	Total Phosphorous	(Report)	(Report)	----	----	----	----
	Total Nitrogen	(Report)	(Report)	----	----	----	----
	Enterococci	Report (*1)	Report (*1)	----	----	----	----
	pH	6.0 su (min)	9.0 su	----	----	----	----

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

Outfall	Parameter	Current Permit		WQ Based		Tech Based	
		Dly Avg Lbs/day	Dly Max Lbs/day	Dly Avg Lbs/day	Dly Max Lbs/day	Dly Avg Lbs/day	Dly Max Lbs/day
007	Copper	----	----	3.33	7.06	4.36	10.2
	Nickel	----	----	11.3	24.0	0.589	1.387
	Acenaphthene	----	----	----	----	0.63	1.69
	Acenaphthylene	----	----	----	----	0.63	1.69
	Acrylonitrile	----	----	10.0	21.2	2.75	6.93
	Anthracene	----	----	----	----	0.63	1.69
	Benzene	----	----	1353	2863	1.06	3.89
	Benzo(a)anthracene	----	----	0.871	1.84	0.63	1.69
	Benzo(a)pyrene	----	----	0.871	1.84	0.66	1.75
	3,4-Benzofluoranthene	----	----	----	----	0.66	1.75
	Benzo(k)fluoranthene	----	----	----	----	0.63	1.69
	Bis(2-ethylhexyl)phthalate	----	----	108	229	2.95	7.99
	Carbon Tetrachloride	----	----	76.5	161.9	0.52	1.09
	Chlorobenzene	----	----	13721	29029	0.43	0.80
	Chloroethane	----	----	----	----	2.98	7.67
	Chloroform	----	----	18845	39869	0.60	1.32
	2-Chlorophenol	----	----	----	----	0.89	2.81
	Chrysene	----	----	863	1825	0.63	1.69
	1,2-Dichlorobenzene	----	----	11439	24201	2.20	4.67
	1,3-Dichlorobenzene	----	----	3812	8065	0.89	1.26
	1,4-Dichlorobenzene	----	----	----	----	0.43	0.80
	1,1-Dichloroethane	----	----	----	----	0.63	1.69
	1,2-Dichloroethane	----	----	1459	3087	1.95	6.04
	1,1-Dichloroethylene	----	----	63095	133487	0.46	0.72
	1,2-trans Dichloroethylene	----	----	----	----	0.60	1.55
	2,4-Dichlorophenol	----	----	----	----	1.12	3.21
	1,2-Dichloropropane	----	----	596	1261	4.38	6.58
	1,3-Dichloropropylene	----	----	557	1178	0.83	1.26
	Diethyl phthalate	----	----	----	----	2.32	5.81
	2,4-Dimethylphenol	----	----	1506	3187	0.52	1.03
	Dimethyl phthalate	----	----	----	----	0.54	1.35
	Di-n-butyl phthalate	----	----	7941	16800	0.77	1.63
	4,6-Dinitro-o-cresol	----	----	----	----	2.23	7.93
	2,4-Dinitrophenol	----	----	----	----	2.03	3.52
	2,4-Dinitrotoluene	----	----	----	----	3.23	8.16
	2,6-Dinitrotoluene	----	----	----	----	7.30	18.35
	Ethylbenzene	----	----	18845	39869	0.92	3.09
	Fluoranthene	----	----	----	----	0.72	1.95
	Fluorene	----	----	----	----	0.63	1.69
	Hexachlorobenzene	----	----	0.0119	0.0251	0.43	0.80
	Hexachloroethane	----	----	164	346	0.60	1.55
	Hexachlorobutadiene	----	----	723	1529	0.57	1.40
	Methyl Chloride	----	----	----	----	2.46	5.44
	Methylene Chloride	----	----	----	----	1.14	2.55

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

Outfall	Parameter	Current Permit		WQ Based		Tech Based	
		Dly Avg Lbs/day	Dly Max Lbs/day	Dly Avg Lbs/day	Dly Max Lbs/day	Dly Avg Lbs/day	Dly Max Lbs/day
007	Naphthalene	----	----	----	----	0.63	1.69
	Nitrobenzene	----	----	1221	2584	0.77	1.95
	2-Nitrophenol	----	----	----	----	1.17	1.98
	4-Nitrophenol	----	----	----	----	2.06	3.55
	Phenanthrene	----	----	0.934	1.97	0.63	1.69
	Phenol	----	----	----	----	0.43	0.74
	Pyrene	----	----	----	----	0.72	1.92
	Tetrachloroethylene	----	----	129	273	0.63	1.60
	Toluene	----	----	----	----	0.74	2.29
	1,2,4-Trichlorobenzene	----	----	----	----	1.95	4.01
	1,1,1-Trichloroethane	----	----	2523872	5339621	0.60	1.55
	1,1,2-Trichloroethane	----	----	778	1647	0.60	1.55
	Trichloroethylene	----	----	1712	3622	0.60	1.55
	Vinyl Chloride	----	----	63.3	134	2.98	7.67
107	Flow	Report (MGD)	Report (MGD)	----	----	----	----
	Enterococci	168 (*1)	500 (*1)	168 (*1)	500 (*1)	----	----
	Residual Chlorine	1.0 mg/L (min)	----	----	----	1.0 mg/L (min)	----
207	Flow	----	----	----	----	Report (MGD)	Report (MGD)
008	Flow	Report (MGD)	Report (MGD)	----	----	----	----
	Total Organic Carbon	N/A	70 mg/L	----	----	----	----
	Oil and Grease	N/A	15 mg/L	----	----	----	----
	pH	6.0 su (min)	9.0 su	----	----	----	----
108	Flow	Report (MGD)	Report (MGD)	----	----	----	----
	Biochemical Oxygen Demand (5-day)	----	12,528 37 mg/L	----	----	----	12,528 37 mg/L
	Total Suspended Solids	----	67,711 200 mg/L	----	----	----	67,711 200 mg/L
	Total Organic Carbon	----	26,407 78 mg/L	----	----	----	26,407 78 mg/L
	Oil and Grease	----	5,078 15 mg/L	----	----	----	5,078 15 mg/L
	Phenols	----	88 0.26 mg/L	----	----	----	88 0.26 mg/L
	Ammonia as Nitrogen	----	1,015 3 mg/L	----	----	----	1,015 3 mg/L
	Sulfides	----	88 0.26 mg/L	----	----	----	88 0.26 mg/L
	Chromium, Total	----	193 0.57 mg/L	----	----	----	193 0.57 mg/L
	Chromium, Hexavalent	----	20 0.06 mg/L	----	----	----	20 0.06 mg/L
	pH	6.0 su (min)	9.0 su	----	----	6.0 su (min)	9.0 su

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

Outfall	Parameter	Current Permit		WQ Based		Tech Based	
		Dly Avg Lbs/day	Dly Max Lbs/day	Dly Avg Lbs/day	Dly Max Lbs/day	Dly Avg Lbs/day	Dly Max Lbs/day
009	Flow	Report (MGD)	Report (MGD)	----	----	----	----
	Total Organic Carbon	N/A	70 mg/L	----	----	----	----
	Oil and Grease	N/A	15 mg/L	----	----	----	----
	Copper, Total	N/A	Report (mg/L)	----	----	----	----
	pH	6.0 su (min)	9.0 su	----	----	----	----

(*1) Units are *Most Probable Number* (MPN) or *Colony Forming Units* (CFU) per 100 mls.

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

Appendix C

Comparison of Technology-Based Effluent Limits and Water Quality-Based Effluent Limits

The following table is a summary of technology-based effluent limitations calculated/assessed in the draft permit (Technology-Based), calculated/assessed water quality-based effluent limitations (Water Quality-Based), and effluent limitations in the existing permit (Existing Permit). Effluent limitations appearing in bold are the most stringent of the three and are included in the draft permit.

[illegible]



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

P. O. Box 13087
Austin, Texas 78711-3087

TPDES PERMIT NO. WQ0000403000
[For TCEQ office use only -
EPA I.D. No. TX0004871]

This permit supersedes and
replaces TPDES Permit No.
WQ0000403000, issued on May
15, 2012.

PERMIT TO DISCHARGE WASTES
under provisions of
Section 402 of the Clean Water Act
and Chapter 26 of the Texas Water Code

Shell Oil Company and Deer Park Refining Limited Partnership

whose mailing address is

P.O. Box 100
Deer Park, Texas 77536-0100

Discharges are authorized into Patrick Bayou

is authorized to treat and discharge wastes from Shell Deer Park Refinery (SIC 2911)

located at 5900 State Highway 225, south of the Houston Ship Channel, west of Patrick Bayou, and
north of State Highway 225 at Center Street in the City of Deer Park, Harris County, Texas 77536

via Outfalls 001, 002, 003, 004, and 009 to Patrick Bayou Tidal portion of the Houston Ship Channel;
via Outfalls 006 and 007 directly to the Houston Ship Channel Tidal; and via Outfall 008 to Boggy
Bayou Tidal, thence to the Houston Ship Channel Tidal in Segment No. 1006 of the San Jacinto River
Basin

only according to effluent limitations, monitoring requirements and other conditions set forth in this
permit, as well as the rules of the Texas Commission on Environmental Quality (TCEQ), the laws of the
State of Texas, and other orders of the TCEQ. The issuance of this permit does not grant to the permittee
the right to use private or public property for conveyance of wastewater along the discharge route
described in this permit. This includes, but is not limited to, property belonging to any individual,
partnership, corporation, or other entity. Neither does this permit authorize any invasion of personal
rights nor any violation of federal, state, or local laws or regulations. It is the responsibility of the
permittee to acquire property rights as may be necessary to use the discharge route.

This permit shall expire at midnight on May 1, 2018.

ISSUED DATE:

For the Commission

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTSOutfall Number 001

1. During the period beginning upon date of permit issuance and lasting through date of issuance of TPDES Permit No. WQ000402000, the permittee is authorized to discharge fire water and stormwater subject to the following effluent limitations:

Volume: Intermittent and flow-variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report (MGD)	Report (MGD)	N/A	1/day (*1)	Estimate
Total Organic Carbon	N/A	70	70	1/day (*1)	Grab
Oil and Grease	N/A	15	15	1/day (*1)	Grab
Copper, Total	N/A	Report	N/A	1/month (*1)	Grab

(*1) When discharge occurs.

2. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/day, by grab sample, when discharge occurs.
3. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
4. Effluent monitoring samples shall be taken at the following location: at Outfall 001, on the east side of the facility, at the point of discharge into Patrick Bayou.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTSOutfall Number 002

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge non-process wastewater (*1), and stormwater subject to the following effluent limitations:

Volume: Intermittent and flow-variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report (MGD)	Report (MGD)	N/A	1/day (*2)	Estimate
Total Organic Carbon	N/A	70	70	1/day (*2)	Grab
Oil and Grease	N/A	15	15	1/day (*2)	Grab
Copper, Total	N/A	Report	N/A	1/month (*2)	Grab

(*1) See Other Requirement No. 13.

(*2) When discharge occurs.

2. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/day, by grab sample, when discharge occurs .
3. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
4. Effluent monitoring samples shall be taken at the following location: at Outfall 002, on the east side of the facility, at the point of discharge into Patrick Bayou.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTSOutfall Number 003

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge non-process wastewater (*1), and stormwater subject to the following effluent limitations:

Volume: Intermittent and flow-variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report (MGD)	Report (MGD)	N/A	1/day (*2)	Estimate
Total Organic Carbon	N/A	70	70	1/day (*2)	Grab
Oil and Grease	N/A	15	15	1/day (*2)	Grab

(*1) See Other Requirement No. 13.

(*2) When discharge occurs.

2. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/day, by grab sample, when discharge occurs.
3. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
4. Effluent monitoring samples shall be taken at the following location: at Outfall 003, on the east side of the facility, at the point of discharge into Patrick Bayou.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTSOutfall Numbers 004 and 009

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge fire water and stormwater subject to the following effluent limitations:

Volume: Intermittent and Flow-variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report (MGD)	Report (MGD)	N/A	1/day (*1)	Estimate
Total Organic Carbon	N/A	70	70	1/day (*1)	Grab
Oil and Grease	N/A	15	15	1/day (*1)	Grab
Copper, Total	N/A	Report	N/A	1/month (*1)	Grab

(*1) When discharge occurs.

2. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/day, by grab sample, when discharge occurs.
3. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
4. Effluent monitoring samples shall be taken at the following locations:

Outfall 004 – at the point of discharge into Patrick Bayou (Outfall 004 is the northern most outfall on the east side of the facility);

Outfall 009 – at the point of discharge into Patrick Bayou (Outfall 009 is approximately 800 feet south of Outfall 004).

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTSOutfall Number 006

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge fire water and stormwater subject to the following effluent limitations:

Volume: Intermittent and Flow-variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report (MGD)	Report (MGD)	N/A	1/day (*1)	Estimate
Total Organic Carbon	N/A	70	70	1/day (*1)	Grab
Oil and Grease	N/A	15	15	1/day (*1)	Grab

(*1) When discharge occurs.

2. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/day, by grab sample, when discharge occurs.
3. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
4. Effluent monitoring samples shall be taken at the following locations: at Outfall 006, at the point of discharge into the Houston Ship Channel (Outfall 006 is approximately 400 east of Outfall 007).

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Outfall Number 007

- During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge treated refinery process wastewaters, ballast water, utility wastewaters, groundwater, previously monitored effluents (treated domestic wastewater via Outfall 107), landfill leachate, tranfered effluent from the adjacent Shell Oil Company facility (*1), and stormwater subject to the following effluent limitations:

The daily average flow of effluent shall not exceed 9.25 million gallons per day (MGD). The daily maximum flow shall not exceed 14.0 MGD.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average lbs/day	Daily Maximum lbs/day	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	9.25 MGD	14.0 MGD	N/A	Continuous	Record
Temperature (*2)	N/A	105 ° F	105 ° F	Continuous	Record
Biochemical Oxygen Demand (5-day)	1410	2820	60	2/Week	Composite
Total Suspended Solids	1980	2970	60	2/Week	Composite
Total Organic Carbon	3000	6000	130	2/Week	Composite
Oil and Grease	660	990	20	2/Week	Grab
Phenols	12	20	0.5	2/Week	Grab
Ammonia as Nitrogen	500	1580	35	2/Week	Composite
Sulfides	10	20	0.4	2/Week	Grab
Chromium, Total	22	44	1.0	2/Week	Composite
Chromium, Hexavalent	2.1	4.7	0.1	2/Week	Composite
Enterococci	Report (*3)	Report (*3)	N/A	1/Week	Grab
Total Nitrogen	Report (mg/L)	Report (mg/L)	N/A	1/Week	Composite
Total Phosphorous	Report (mg/L)	Report (mg/L)	N/A	1/Week	Composite
Dioxin/Furans (TEQ) (*4)	N/A	Report (ppq TEQ)	N/A	1/6 months	Grab
Total Copper	3.33	7.06	0.12	1/Transfer Event (*5)	Composite
Total Nickel	0.59	1.39	0.03	1/Transfer Event (*5)	Composite
Acenaphthene	0.63	1.69	0.03	1/Transfer Event (*5)	Composite
Acenaphthylene	0.63	1.69	0.03	1/Transfer Event (*5)	Composite
Acrylonitrile	2.75	6.93	0.13	1/Transfer Event (*5)	Composite
Anthracene	0.63	1.69	0.03	1/Transfer Event (*5)	Composite
Benzene	1.06	3.89	0.07	1/Transfer Event (*5)	Composite
Benzo(a)anthracene	0.63	1.69	0.03	1/Transfer Event (*5)	Composite
Benzo(a)pyrene	0.66	1.75	0.03	1/Transfer Event (*5)	Composite

1. Continued.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements Report Daily Average and Daily Maximum	
	Daily Average lbs/day	Daily Maximum lbs/day	Single Grab mg/L	Measurement Frequency	Sample Type
3,4-Benzofluoranthene	0.66	1.75	0.03	1/Transfer Event (*5)	Composite
Benzo(k)fluoranthene	0.63	1.69	0.03	1/Transfer Event (*5)	Composite
Bis(2-ethylhexyl)phthalate	2.95	7.99	0.14	1/Transfer Event (*5)	Composite
Carbon Tetrachloride	0.52	1.09	0.02	1/Transfer Event (*5)	Composite
Chlorobenzene	0.43	0.80	0.01	1/Transfer Event (*5)	Composite
Chloroethane	2.98	7.67	0.14	1/Transfer Event (*5)	Composite
Chloroform	0.60	1.32	0.02	1/Transfer Event (*5)	Composite
2-Chlorophenol	0.89	2.81	0.05	1/Transfer Event (*5)	Composite
Chrysene	0.63	1.69	0.03	1/Transfer Event (*5)	Composite
1,2-Dichlorobenzene	2.20	4.67	0.08	1/Transfer Event (*5)	Composite
1,3-Dichlorobenzene	0.89	1.26	0.02	1/Transfer Event (*5)	Composite
1,4-Dichlorobenzene	0.43	0.80	0.01	1/Transfer Event (*5)	Composite
1,1-Dichloroethane	0.63	1.69	0.03	1/Transfer Event (*5)	Composite
1,2-Dichloroethane	1.95	6.04	0.11	1/Transfer Event (*5)	Composite
1,1-Dichloroethylene	0.46	0.72	0.01	1/Transfer Event (*5)	Composite
1,2-trans Dichloroethylene	0.60	1.55	0.03	1/Transfer Event (*5)	Composite
2,4-Dichlorophenol	1.12	3.21	0.06	1/Transfer Event (*5)	Composite
1,2-Dichloropropane	4.38	6.58	0.12	1/Transfer Event (*5)	Composite
1,3-Dichloropropylene	0.83	1.26	0.02	1/Transfer Event (*5)	Composite
Diethyl phthalate	2.32	5.81	0.11	1/Transfer Event (*5)	Composite
2,4-Dimethylphenol	0.52	1.03	0.02	1/Transfer Event (*5)	Composite
Dimethyl phthalate	0.54	1.35	0.02	1/Transfer Event (*5)	Composite
Di-n-butyl phthalate	0.77	1.63	0.03	1/Transfer Event (*5)	Composite
4,6-Dinitro-o-cresol	2.23	7.93	0.14	1/Transfer Event (*5)	Composite
2,4-Dinitrophenol	2.03	3.52	0.06	1/Transfer Event (*5)	Composite
2,4-Dinitrotoluene	3.23	8.16	0.15	1/Transfer Event (*5)	Composite
2,6-Dinitrotoluene	7.30	18.35	0.33	1/Transfer Event (*5)	Composite
Ethylbenzene	0.92	3.09	0.06	1/Transfer Event (*5)	Composite
Fluoranthene	0.72	1.95	0.04	1/Transfer Event (*5)	Composite

1. Continued.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements Report Daily Average and Daily Maximum	
	Daily Average lbs/day	Daily Maximum lbs/day	Single Grab mg/L	Measurement Frequency	Sample Type
Fluorene	0.63	1.69	0.03	1/Transfer Event (*5)	Composite
Hexachlorobenzene	0.0119	0.0251	0.01	1/Transfer Event (*5)	Composite
Hexachlorobutadiene	0.57	1.40	0.03	1/Transfer Event (*5)	Composite
Hexachloroethane	0.60	1.55	0.03	1/Transfer Event (*5)	Composite
Methyl Chloride	2.46	5.44	0.10	1/Transfer Event (*5)	Composite
Methylene Chloride	1.14	2.55	0.05	1/Transfer Event (*5)	Composite
Naphthalene	0.63	1.69	0.03	1/Transfer Event (*5)	Composite
Nitrobenzene	0.77	1.95	0.04	1/Transfer Event (*5)	Composite
2-Nitrophenol	1.17	1.98	0.04	1/Transfer Event (*5)	Composite
4-Nitrophenol	2.06	3.55	0.06	1/Transfer Event (*5)	Composite
Phenanthrene	0.63	1.69	0.03	1/Transfer Event (*5)	Composite
Phenol	0.43	0.74	0.01	1/Transfer Event (*5)	Composite
Pyrene	0.72	1.92	0.03	1/Transfer Event (*5)	Composite
Tetrachloroethylene	0.63	1.60	0.03	1/Transfer Event (*5)	Composite
Toluene	0.74	2.29	0.04	1/Transfer Event (*5)	Composite
1,2,4-Trichlorobenzene	1.95	4.01	0.07	1/Transfer Event (*5)	Composite
1,1,1-Trichloroethane	0.60	1.55	0.03	1/Transfer Event (*5)	Composite
1,1,2-Trichloroethane	0.60	1.55	0.03	1/Transfer Event (*5)	Composite
Trichloroethylene	0.60	1.55	0.03	1/Transfer Event (*5)	Composite
Vinyl Chloride	2.98	7.67	0.14	1/Transfer Event (*5)	Composite

(*1) See Other Requirement No. 16.

(*2) See Other Requirement No. 3.

(*3) Units are *Most Probable Number* (MPN) or *Colony Forming Units* (CFU) per 100 mls. See Other Requirement No. 7.

(*4) See Other Requirement Nos. 14 and 15.

(*5) The parameter must be monitored once per transfer event (when discharge via Outfall 007 includes process wastewaters diverted from the adjacent Shell Oil Company petrochemical manufacturing plant).

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Outfall Number 007

2. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored continuously and recorded. See Other Requirement No. 4.
3. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
4. Effluent monitoring samples shall be taken at the following location: Outfall 007 – at the outlet of the final treatment unit prior to discharge to the Houston Ship Channel.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTSOutfall Number 107

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge disinfected domestic wastewater subject to the following effluent limitations:

Volume: Intermittent and Flow-variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report (MGD)	Report (MGD)	N/A	1/day	Estimate
Enterococci	168 (*1)	500 (*1)	500 (*1)	1/week	Grab

(*1) Units are *Most Probable Number* (MPN) or *Colony Forming Units* (CFU) per 100 mls. See Other Requirement No. 7.

2. All domestic wastewater shall be chlorinated sufficiently to maintain at least a 1.0 mg/l chlorine residual after at least 20 minutes contact time (based on peak flow) prior to mixing with any other waters, and shall be monitored 1/week by grab sample. The permittee shall provide a readily available sampling point for discharges from the chlorine contact chamber.
3. Effluent monitoring samples shall be taken at the following location: Outfall 107, at the point of discharge from the chlorine contact chamber, prior to mixing with other wastewaters.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (CONTINUED)Outfall Number 207

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge untreated process, ballast, and utility wastewaters, groundwater, previously monitored effluents (treated domestic wastewater), landfill leachate, and stormwater subject to the following effluent limitations:

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average MGD	Daily Maximum MGD	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report	Report	N/A	1/day (*1)	Estimate

(*1) When wastewaters are diverted from the North Effluent Treater (NET) and routed to the South Effluent Treater (SET) for treatment and discharge via Outfalls 001, 101, and/or 004 of TPDES Permit No. WQ0000402000.

2. The permittee shall maintain a log that records following information related to each diversion of wastewater via Outfall 207: 1) dates and duration of diversion events; 2) volume of wastewater discharged during diversion events; and 3) cause of diversion event. The log must be maintained on-site for a period of five (5) years and must be made readily available to TCEQ personnel upon request.
3. Effluent monitoring samples shall be taken at the following location: Outfall 207 –the at the point of diversion prior to being routed to the adjaced facility (WQ0000402000) for treament.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTSOutfall Number 008

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge fire water, previously monitored effluents (contaminated runoff), and stormwater subject to the following effluent limitations:

Volume: Intermittent and Flow-variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report (MGD)	Report (MGD)	N/A	1/day (*1)	Estimate
Total Organic Carbon	N/A	70	70	1/day (*1)	Grab
Oil and Grease	N/A	15	15	1/day (*1)	Grab

(*1) When discharge occurs.

2. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/day, by grab sample, when discharge occurs.
3. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
4. Effluent monitoring samples shall be taken at the following location: Outfall 008, at the point of discharge to the Houston Ship Channel via Boggy Bayou.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Outfall Number 108

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge contaminated runoff (*2) subject to the following effluent limitations:

Volume: Intermittent and flow-variable.

Effluent Characteristics	Discharge Limitations				Minimum Self-Monitoring Requirements	
	Daily Average lbs/day	Daily Maximum mg/L	lbs/day	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report (MGD)	Report (MGD)		N/A	1/day (*3)	Estimate
Biochemical Oxygen Demand (5-day)	N/A	37	12,528	37	1/week (*1) (*3)	Grab
Total Suspended Solids	N/A	200	67,711	200	1/week (*1) (*3)	Grab
Total Organic Carbon	N/A	78	26,407	78	1/week (*1) (*3)	Grab
Oil and Grease	N/A	15	5,078	15	1/week (*1) (*3)	Grab
Phenols	N/A	0.26	88	0.26	1/week (*1) (*3)	Grab
Ammonia as Nitrogen	N/A	3	1,015	3	1/week (*1) (*3)	Grab
Sulfides	N/A	0.26	88	0.26	1/week (*1) (*3)	Grab
Chromium, Total	N/A	0.57	193	0.57	1/week (*1) (*3)	Grab
Chromium, Hexavalent	N/A	0.06	20	0.06	1/week (*1) (*3)	Grab

(*1) Samples shall be taken within the first 30 minutes of discharge from the Stormwater Impoundment Basin (SWIB).

(*2) See Other Requirement No. 9.

(*3) When discharge occurs.

2. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/day, by grab sample, when discharge occurs. Samples shall be taken within the first 30 minutes of discharge from the SWIB .
3. Effluent monitoring samples shall be taken at the following location: Outfall 108, at the outlet of the SWIB, prior to mixing with other wastewaters in the Big Ditch.

DEFINITIONS AND STANDARD PERMIT CONDITIONS

As required by Title 30 Texas Administrative Code (TAC) Chapter 305, certain regulations appear as standard conditions in waste discharge permits. 30 TAC §§305.121 - 305.129 (relating to Permit Characteristics and Conditions) as promulgated under the Texas Water Code (TWC) §§5.103 and 5.105, and the Texas Health and Safety Code (THSC) §§361.017 and 361.024(a), establish the characteristics and standards for waste discharge permits, including sewage sludge, and those sections of 40 Code of Federal Regulations (CFR) Part 122 adopted by reference by the Commission. The following text includes these conditions and incorporates them into this permit. All definitions in Texas Water Code §26.001 and 30 TAC Chapter 305 shall apply to this permit and are incorporated by reference. Some specific definitions of words or phrases used in this permit are as follows:

1. Flow Measurements

- a. Annual average flow - the arithmetic average of all daily flow determinations taken within the preceding 12 consecutive calendar months. The annual average flow determination shall consist of daily flow volume determinations made by a totalizing meter, charted on a chart recorder, and limited to major domestic wastewater discharge facilities with a one million gallons per day or greater permitted flow.
- b. Daily average flow - the arithmetic average of all determinations of the daily flow within a period of one calendar month. The daily average flow determination shall consist of determinations made on at least four separate days. If instantaneous measurements are used to determine the daily flow, the determination shall be the arithmetic average of all instantaneous measurements taken during that month. Daily average flow determination for intermittent discharges shall consist of a minimum of three flow determinations on days of discharge.
- c. Daily maximum flow - the highest total flow for any 24-hour period in a calendar month.
- d. Instantaneous flow - the measured flow during the minimum time required to interpret the flow measuring device.
- e. 2-hour peak flow (domestic wastewater treatment plants) - the maximum flow sustained for a two-hour period during the period of daily discharge. The average of multiple measurements of instantaneous maximum flow within a two-hour period may be used to calculate the 2-hour peak flow.
- f. Maximum 2-hour peak flow (domestic wastewater treatment plants) - the highest 2-hour peak flow for any 24-hour period in a calendar month.

2. Concentration Measurements

- a. Daily average concentration - the arithmetic average of all effluent samples, composite or grab as required by this permit, within a period of one calendar month, consisting of at least four separate representative measurements.
 - i. For domestic wastewater treatment plants - When four samples are not available in a calendar month, the arithmetic average (weighted by flow) of all values in the previous four consecutive month period consisting of at least four measurements shall be utilized as the daily average concentration.
 - ii. For all other wastewater treatment plants - When four samples are not available in a calendar month, the arithmetic average (weighted by flow) of all values taken during the month shall be utilized as the daily average concentration.
- b. 7-day average concentration - the arithmetic average of all effluent samples, composite or grab as required by this permit, within a period of one calendar week, Sunday through Saturday.
- c. Daily maximum concentration - the maximum concentration measured on a single day, by the sample type specified in the permit, within a period of one calendar month.

- d. Daily discharge - the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in terms of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the sampling day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the sampling day.

The "daily discharge" determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the "daily discharge" determination of concentration shall be the arithmetic average (weighted by flow value) of all samples collected during that day.

- e. Bacteria concentration (Fecal coliform, *E. coli*, or Enterococci) – the number of colonies of bacteria per 100 milliliters effluent. The daily average bacteria concentration is a geometric mean of the values for the effluent samples collected in a calendar month. The geometric mean shall be determined by calculating the n th root of the product of all measurements made in a calendar month, where n equals the number of measurements made; or computed as the antilogarithm of the arithmetic mean of the logarithms of all measurements made in a calendar month. For any measurement of bacteria equaling zero, a substitute value of one shall be made for input into either computation method. If specified, the 7-day average for bacteria is the geometric mean of the values for all effluent samples collected during a calendar week.
- f. Daily average loading (lbs/day) - the arithmetic average of all daily discharge loading calculations during a period of one calendar month. These calculations must be made for each day of the month that a parameter is analyzed. The daily discharge, in terms of mass (lbs/day), is calculated as $(\text{Flow, MGD} \times \text{Concentration, mg/L} \times 8.34)$.
- g. Daily maximum loading (lbs/day) - the highest daily discharge, in terms of mass (lbs/day), within a period of one calendar month.

3. Sample Type

- a. Composite sample - For domestic wastewater, a composite sample is a sample made up of a minimum of three effluent portions collected in a continuous 24-hour period or during the period of daily discharge if less than 24 hours, and combined in volumes proportional to flow, and collected at the intervals required by 30 TAC §319.9(a). For industrial wastewater, a composite sample is a sample made up of a minimum of three effluent portions collected in a continuous 24-hour period or during the period of daily discharge if less than 24 hours, and combined in volumes proportional to flow, and collected at the intervals required by 30 TAC §319.9(c).
 - b. Grab sample - an individual sample collected in less than 15 minutes.
- 4. Treatment Facility (facility) - wastewater facilities used in the conveyance, storage, treatment, recycling, reclamation or disposal of domestic sewage, industrial wastes, agricultural wastes, recreational wastes, or other wastes including sludge handling or disposal facilities under the jurisdiction of the Commission.
 - 5. The term "sewage sludge" is defined as solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in 30 TAC Chapter 312. This includes the solids that have not been classified as hazardous waste separated from wastewater by unit processes.
 - 6. Bypass - the intentional diversion of a waste stream from any portion of a treatment facility.

MONITORING AND REPORTING REQUIREMENTS

1. Self-Reporting

Monitoring results shall be provided at the intervals specified in the permit. Unless otherwise specified in this permit or otherwise ordered by the Commission, the permittee shall conduct effluent sampling and reporting in accordance with 30 TAC §§319.4 - 319.12. Unless otherwise specified, a monthly effluent report shall be submitted each month, to the Enforcement Division (MC 224), by the 20th day of the following month for each discharge that is described by this

permit whether or not a discharge is made for that month. Monitoring results must be reported on an approved self-report form that is signed and certified as required by Monitoring and Reporting Requirements No. 10.

As provided by state law, the permittee is subject to administrative, civil and criminal penalties, as applicable, for negligently or knowingly violating the Clean Water Act; TWC Chapters 26, 27, and 28; and THSC Chapter 361, including but not limited to knowingly making any false statement, representation, or certification on any report, record, or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, or falsifying, tampering with or knowingly rendering inaccurate any monitoring device or method required by this permit or violating any other requirement imposed by state or federal regulations.

2. Test Procedures

- a. Unless otherwise specified in this permit, test procedures for the analysis of pollutants shall comply with procedures specified in 30 TAC §§319.11 - 319.12. Measurements, tests, and calculations shall be accurately accomplished in a representative manner.
- b. All laboratory tests submitted to demonstrate compliance with this permit must meet the requirements of 30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification.

3. Records of Results

- a. Monitoring samples and measurements shall be taken at times and in a manner so as to be representative of the monitored activity.
- b. Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), monitoring and reporting records, including strip charts and records of calibration and maintenance, copies of all records required by this permit, records of all data used to complete the application for this permit, and the certification required by 40 CFR §264.73(b)(9) shall be retained at the facility site, or shall be readily available for review by a TCEQ representative for a period of three years from the date of the record or sample, measurement, report, application or certification. This period shall be extended at the request of the Executive Director.
- c. Records of monitoring activities shall include the following:
 - i. date, time, and place of sample or measurement;
 - ii. identity of individual who collected the sample or made the measurement;
 - iii. date and time of analysis;
 - iv. identity of the individual and laboratory who performed the analysis;
 - v. the technique or method of analysis; and
 - vi. the results of the analysis or measurement and quality assurance/quality control records.

The period during which records are required to be kept shall be automatically extended to the date of the final disposition of any administrative or judicial enforcement action that may be instituted against the permittee.

4. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit using approved analytical methods as specified above, all results of such monitoring shall be included in the calculation and reporting of the values submitted on the approved self-report form. Increased frequency of sampling shall be indicated on the self-report form.

5. Calibration of Instruments

All automatic flow measuring or recording devices and all totalizing meters for measuring flows shall be accurately calibrated by a trained person at plant start-up and as often thereafter as

necessary to ensure accuracy, but not less often than annually unless authorized by the Executive Director for a longer period. Such person shall verify in writing that the device is operating properly and giving accurate results. Copies of the verification shall be retained at the facility site or shall be readily available for review by a TCEQ representative for a period of three years.

6. Compliance Schedule Reports

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date to the Regional Office and the Enforcement Division (MC 224).

7. Noncompliance Notification

- a. In accordance with 30 TAC §305.125(9) any noncompliance that may endanger human health or safety, or the environment shall be reported by the permittee to the TCEQ. Report of such information shall be provided orally or by facsimile transmission (FAX) to the Regional Office within 24 hours of becoming aware of the noncompliance. A written submission of such information shall also be provided by the permittee to the Regional Office and the Enforcement Division (MC 224) within five working days of becoming aware of the noncompliance. The written submission shall contain a description of the noncompliance and its cause; the potential danger to human health or safety, or the environment; the period of noncompliance, including exact dates and times; if the noncompliance has not been corrected, the time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance, and to mitigate its adverse effects.
- b. The following violations shall be reported under Monitoring and Reporting Requirement 7.a.:
 - i. unauthorized discharges as defined in Permit Condition 2(g).
 - ii. any unanticipated bypass that exceeds any effluent limitation in the permit.
 - iii. violation of a permitted maximum daily discharge limitation for pollutants listed specifically in the Other Requirements section of an Industrial TPDES permit.
- c. In addition to the above, any effluent violation that deviates from the permitted effluent limitation by more than 40% shall be reported by the permittee in writing to the Regional Office and the Enforcement Division (MC 224) within 5 working days of becoming aware of the noncompliance.
- d. Any noncompliance other than that specified in this section, or any required information not submitted or submitted incorrectly, shall be reported to the Enforcement Division (MC 224) as promptly as possible. For effluent limitation violations, noncompliances shall be reported on the approved self-report form.

8. In accordance with the procedures described in 30 TAC §§35.301 - 35.303 (relating to Water Quality Emergency and Temporary Orders) if the permittee knows in advance of the need for a bypass, it shall submit prior notice by applying for such authorization.

9. Changes in Discharges of Toxic Substances

All existing manufacturing, commercial, mining, and silvicultural permittees shall notify the Regional Office, orally or by facsimile transmission within 24 hours, and both the Regional Office and the Enforcement Division (MC 224) in writing within five (5) working days, after becoming aware of or having reason to believe:

- a. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant listed at 40 CFR Part 122, Appendix D, Tables II and III (excluding Total Phenols) that is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - i. one hundred micrograms per liter (100 µg/L);
 - ii. two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

- iii. five (5) times the maximum concentration value reported for that pollutant in the permit application; or
 - iv. the level established by the TCEQ.
- b. That any activity has occurred or will occur that would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant that is not limited in the permit, if that discharge will exceed the highest of the following “notification levels”:
- i. five hundred micrograms per liter (500 µg/L);
 - ii. one milligram per liter (1 mg/L) for antimony;
 - iii. ten (10) times the maximum concentration value reported for that pollutant in the permit application; or
 - iv. the level established by the TCEQ.

10. Signatories to Reports

All reports and other information requested by the Executive Director shall be signed by the person and in the manner required by 30 TAC §305.128 (relating to Signatories to Reports).

11. All Publicly Owned Treatment Works (POTWs) must provide adequate notice to the Executive Director of the following:

- a. any new introduction of pollutants into the POTW from an indirect discharger that would be subject to CWA §301 or §306 if it were directly discharging those pollutants;
- b. any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit; and
- c. for the purpose of this paragraph, adequate notice shall include information on:
 - i. the quality and quantity of effluent introduced into the POTW; and
 - ii. any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

PERMIT CONDITIONS

1. General

- a. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in an application or in any report to the Executive Director, it shall promptly submit such facts or information.
- b. This permit is granted on the basis of the information supplied and representations made by the permittee during action on an application, and relying upon the accuracy and completeness of that information and those representations. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked, in whole or in part, in accordance with 30 TAC Chapter 305, Subchapter D, during its term for good cause including, but not limited to, the following:
 - i. violation of any terms or conditions of this permit;
 - ii. obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
 - iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.
- c. The permittee shall furnish to the Executive Director, upon request and within a reasonable time, any information to determine whether cause exists for amending, revoking, suspending, or terminating the permit. The permittee shall also furnish to the Executive Director, upon request, copies of records required to be kept by the permit.

2. Compliance

- a. Acceptance of the permit by the person to whom it is issued constitutes acknowledgment and agreement that such person will comply with all the terms and conditions embodied in the permit, and the rules and other orders of the Commission.
- b. The permittee has a duty to comply with all conditions of the permit. Failure to comply with any permit condition constitutes a violation of the permit and the Texas Water Code or the Texas Health and Safety Code, and is grounds for enforcement action, for permit amendment, revocation, or suspension, or for denial of a permit renewal application or an application for a permit for another facility.
- c. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit.
- d. The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal or other permit violation that has a reasonable likelihood of adversely affecting human health or the environment.
- e. Authorization from the Commission is required before beginning any change in the permitted facility or activity that may result in noncompliance with any permit requirements.
- f. A permit may be amended, suspended and reissued, or revoked for cause in accordance with 30 TAC §§305.62 and 305.66 and TWC §7.302. The filing of a request by the permittee for a permit amendment, suspension and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
- g. There shall be no unauthorized discharge of wastewater or any other waste. For the purpose of this permit, an unauthorized discharge is considered to be any discharge of wastewater into or adjacent to water in the state at any location not permitted as an outfall or otherwise defined in the Other Requirements section of this permit.
- h. In accordance with 30 TAC §305.535(a), the permittee may allow any bypass to occur from a TPDES permitted facility that does not cause permitted effluent limitations to be exceeded or an unauthorized discharge to occur, but only if the bypass is also for essential maintenance to assure efficient operation.
- i. The permittee is subject to administrative, civil, and criminal penalties, as applicable, under Texas Water Code §§7.051 - 7.075 (relating to Administrative Penalties), 7.101 - 7.111 (relating to Civil Penalties), and 7.141 - 7.202 (relating to Criminal Offenses and Penalties) for violations including, but not limited to, negligently or knowingly violating the federal CWA §§301, 302, 306, 307, 308, 318, or 405, or any condition or limitation implementing any sections in a permit issued under the CWA §402, or any requirement imposed in a pretreatment program approved under the CWA §§402(a)(3) or 402(b)(8).

3. Inspections and Entry

- a. Inspection and entry shall be allowed as prescribed in the TWC Chapters 26, 27, and 28, and THSC Chapter 361.
- b. The members of the Commission and employees and agents of the Commission are entitled to enter any public or private property at any reasonable time for the purpose of inspecting and investigating conditions relating to the quality of water in the state or the compliance with any rule, regulation, permit, or other order of the Commission. Members, employees, or agents of the Commission and Commission contractors are entitled to enter public or private property at any reasonable time to investigate or monitor or, if the responsible party is not responsive or there is an immediate danger to public health or the environment, to remove or remediate a condition related to the quality of water in the state. Members, employees, Commission contractors, or agents acting under this authority who enter private property shall observe the establishment's rules and regulations concerning safety, internal security, and fire protection, and if the property has management in residence, shall notify management or the person then in charge of his presence and shall exhibit proper credentials. If any member, employee,

Commission contractor, or agent is refused the right to enter in or on public or private property under this authority, the Executive Director may invoke the remedies authorized in TWC §7.002. The statement above, that Commission entry shall occur in accordance with an establishment's rules and regulations concerning safety, internal security, and fire protection, is not grounds for denial or restriction of entry to any part of the facility, but merely describes the Commission's duty to observe appropriate rules and regulations during an inspection.

4. Permit Amendment or Renewal

- a. The permittee shall give notice to the Executive Director as soon as possible of any planned physical alterations or additions to the permitted facility if such alterations or additions would require a permit amendment or result in a violation of permit requirements. Notice shall also be required under this paragraph when:
 - i. the alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in accordance with 30 TAC §305.534 (relating to New Sources and New Dischargers); or
 - ii. the alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in the permit, nor to notification requirements in Monitoring and Reporting Requirements No. 9; or
 - iii. the alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
- b. Prior to any facility modifications, additions, or expansions that will increase the plant capacity beyond the permitted flow, the permittee must apply for and obtain proper authorization from the Commission before commencing construction.
- c. The permittee must apply for an amendment or renewal at least 180 days prior to expiration of the existing permit in order to continue a permitted activity after the expiration date of the permit. If an application is submitted prior to the expiration date of the permit, the existing permit shall remain in effect until the application is approved, denied, or returned. If the application is returned or denied, authorization to continue such activity shall terminate upon the effective date of the action. If an application is not submitted prior to the expiration date of the permit, the permit shall expire and authorization to continue such activity shall terminate.
- d. Prior to accepting or generating wastes that are not described in the permit application or that would result in a significant change in the quantity or quality of the existing discharge, the permittee must report the proposed changes to the Commission. The permittee must apply for a permit amendment reflecting any necessary changes in permit conditions, including effluent limitations for pollutants not identified and limited by this permit.
- e. In accordance with the TWC §26.029(b), after a public hearing, notice of which shall be given to the permittee, the Commission may require the permittee, from time to time, for good cause, in accordance with applicable laws, to conform to new or additional conditions.
- f. If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under CWA §307(a) for a toxic pollutant that is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition. The permittee shall comply with effluent standards or prohibitions established under CWA §307(a) for toxic pollutants within the time provided in the regulations that established those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

5. Permit Transfer

- a. Prior to any transfer of this permit, Commission approval must be obtained. The Commission shall be notified in writing of any change in control or ownership of facilities authorized by this permit. Such notification should be sent to the Applications Review and Processing Team (MC 148) of the Water Quality Division.
- b. A permit may be transferred only according to the provisions of 30 TAC §305.64 (relating to Transfer of Permits) and 30 TAC §50.133 (relating to Executive Director Action on Application or WQMP update).

6. Relationship to Hazardous Waste Activities

This permit does not authorize any activity of hazardous waste storage, processing, or disposal that requires a permit or other authorization pursuant to the Texas Health and Safety Code.

7. Relationship to Water Rights

Disposal of treated effluent by any means other than discharge directly to water in the state must be specifically authorized in this permit and may require a permit pursuant to Texas Water Code Chapter 11.

8. Property Rights

A permit does not convey any property rights of any sort, or any exclusive privilege.

9. Permit Enforceability

The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

10. Relationship to Permit Application

The application pursuant to which the permit has been issued is incorporated herein; provided, however, that in the event of a conflict between the provisions of this permit and the application, the provisions of the permit shall control.

11. Notice of Bankruptcy.

- a. Each permittee shall notify the executive director, in writing, immediately following the filing of a voluntary or involuntary petition for bankruptcy under any chapter of Title 11 (Bankruptcy) of the United States Code (11 USC) by or against:
 - i. the permittee;
 - ii. an entity (as that term is defined in 11 USC, §101(15)) controlling the permittee or listing the permit or permittee as property of the estate; or
 - iii. an affiliate (as that term is defined in 11 USC, §101(2)) of the permittee.
- b. This notification must indicate:
 - i. the name of the permittee;
 - ii. the permit number(s);
 - iii. the bankruptcy court in which the petition for bankruptcy was filed; and
 - iv. the date of filing of the petition.

OPERATIONAL REQUIREMENTS

1. The permittee shall at all times ensure that the facility and all of its systems of collection, treatment, and disposal are properly operated and maintained. This includes, but is not limited to, the regular, periodic examination of wastewater solids within the treatment plant by the operator in order to maintain an appropriate quantity and quality of solids inventory as described in the various operator training manuals and according to accepted industry standards for process

control. Process control, maintenance, and operations records shall be retained at the facility site, or shall be readily available for review by a TCEQ representative, for a period of three years.

2. Upon request by the Executive Director, the permittee shall take appropriate samples and provide proper analysis in order to demonstrate compliance with Commission rules. Unless otherwise specified in this permit or otherwise ordered by the Commission, the permittee shall comply with all applicable provisions of 30 TAC Chapter 312 concerning sewage sludge use and disposal and 30 TAC §§319.21 - 319.29 concerning the discharge of certain hazardous metals.
3. Domestic wastewater treatment facilities shall comply with the following provisions:
 - a. The permittee shall notify the Municipal Permits Team, Wastewater Permitting Section (MC 148) of the Water Quality Division, in writing, of any facility expansion at least 90 days prior to conducting such activity.
 - b. The permittee shall submit a closure plan for review and approval to the Municipal Permits Team, Wastewater Permitting Section (MC 148) of the Water Quality Division, for any closure activity at least 90 days prior to conducting such activity. Closure is the act of permanently taking a waste management unit or treatment facility out of service and includes the permanent removal from service of any pit, tank, pond, lagoon, surface impoundment or other treatment unit regulated by this permit.
4. The permittee is responsible for installing prior to plant start-up, and subsequently maintaining, adequate safeguards to prevent the discharge of untreated or inadequately treated wastes during electrical power failures by means of alternate power sources, standby generators, or retention of inadequately treated wastewater.
5. Unless otherwise specified, the permittee shall provide a readily accessible sampling point and, where applicable, an effluent flow measuring device or other acceptable means by which effluent flow may be determined.
6. The permittee shall remit an annual water quality fee to the Commission as required by 30 TAC Chapter 21. Failure to pay the fee may result in revocation of this permit under TWC §7.302(b)(6).
7. Documentation

For all written notifications to the Commission required of the permittee by this permit, the permittee shall keep and make available a copy of each such notification under the same conditions as self-monitoring data are required to be kept and made available. Except for information required for TPDES permit applications, effluent data, including effluent data in permits, draft permits and permit applications, and other information specified as not confidential in 30 TAC §1.5(d), any information submitted pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted in the manner prescribed in the application form or by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, information may be made available to the public without further notice. If the Commission or Executive Director agrees with the designation of confidentiality, the TCEQ will not provide the information for public inspection unless required by the Texas Attorney General or a court pursuant to an open records request. If the Executive Director does not agree with the designation of confidentiality, the person submitting the information will be notified.

8. Facilities that generate domestic wastewater shall comply with the following provisions; domestic wastewater treatment facilities at permitted industrial sites are excluded.
 - a. Whenever flow measurements for any domestic sewage treatment facility reach 75% of the permitted daily average or annual average flow for three consecutive months, the permittee must initiate engineering and financial planning for expansion or upgrading of the domestic wastewater treatment or collection facilities. Whenever the flow reaches 90% of the permitted daily average or annual average flow for three consecutive months, the permittee shall obtain necessary authorization from the Commission to commence construction of the necessary additional treatment or collection facilities. In the case of a domestic wastewater treatment facility that reaches 75% of the permitted daily average or annual average flow for three consecutive months, and the planned population to be served or the quantity of waste

produced is not expected to exceed the design limitations of the treatment facility, the permittee shall submit an engineering report supporting this claim to the Executive Director of the Commission.

If in the judgment of the Executive Director the population to be served will not cause permit noncompliance, then the requirement of this section may be waived. To be effective, any waiver must be in writing and signed by the Director of the Enforcement Division (MC 149) of the Commission, and such waiver of these requirements will be reviewed upon expiration of the existing permit; however, any such waiver shall not be interpreted as condoning or excusing any violation of any permit parameter.

- b. The plans and specifications for domestic sewage collection and treatment works associated with any domestic permit must be approved by the Commission, and failure to secure approval before commencing construction of such works or making a discharge is a violation of this permit and each day is an additional violation until approval has been secured.
 - c. Permits for domestic wastewater treatment plants are granted subject to the policy of the Commission to encourage the development of area-wide waste collection, treatment, and disposal systems. The Commission reserves the right to amend any domestic wastewater permit in accordance with applicable procedural requirements to require the system covered by this permit to be integrated into an area-wide system, should such be developed; to require the delivery of the wastes authorized to be collected in, treated by or discharged from said system, to such area-wide system; or to amend this permit in any other particular to effectuate the Commission's policy. Such amendments may be made when the changes required are advisable for water quality control purposes and are feasible on the basis of waste treatment technology, engineering, financial, and related considerations existing at the time the changes are required, exclusive of the loss of investment in or revenues from any then existing or proposed waste collection, treatment or disposal system.
9. Domestic wastewater treatment plants shall be operated and maintained by sewage plant operators holding a valid certificate of competency at the required level as defined in 30 TAC Chapter 30.
 10. For Publicly Owned Treatment Works (POTWs), the 30-day average (or monthly average) percent removal for BOD and TSS shall not be less than 85%, unless otherwise authorized by this permit.
 11. Facilities that generate industrial solid waste as defined in 30 TAC §335.1 shall comply with these provisions:
 - a. Any solid waste, as defined in 30 TAC §335.1 (including but not limited to such wastes as garbage, refuse, sludge from a waste treatment, water supply treatment plant or air pollution control facility, discarded materials, discarded materials to be recycled, whether the waste is solid, liquid, or semisolid), generated by the permittee during the management and treatment of wastewater, must be managed in accordance with all applicable provisions of 30 TAC Chapter 335, relating to Industrial Solid Waste Management.
 - b. Industrial wastewater that is being collected, accumulated, stored, or processed before discharge through any final discharge outfall, specified by this permit, is considered to be industrial solid waste until the wastewater passes through the actual point source discharge and must be managed in accordance with all applicable provisions of 30 TAC Chapter 335.
 - c. The permittee shall provide written notification, pursuant to the requirements of 30 TAC §335.8(b)(1), to the Corrective Action Section (MC 127) of the Remediation Division informing the Commission of any closure activity involving an Industrial Solid Waste Management Unit, at least 90 days prior to conducting such an activity.
 - d. Construction of any industrial solid waste management unit requires the prior written notification of the proposed activity to the Registration and Reporting Section (MC 129) of the Permitting and Remediation Support Division. No person shall dispose of industrial solid waste, including sludge or other solids from wastewater treatment processes, prior to fulfilling the deed recordation requirements of 30 TAC §335.5.

- e. The term “industrial solid waste management unit” means a landfill, surface impoundment, waste-pile, industrial furnace, incinerator, cement kiln, injection well, container, drum, salt dome waste containment cavern, or any other structure vessel, appurtenance, or other improvement on land used to manage industrial solid waste.
- f. The permittee shall keep management records for all sludge (or other waste) removed from any wastewater treatment process. These records shall fulfill all applicable requirements of 30 TAC Chapter 335 and must include the following, as it pertains to wastewater treatment and discharge:
 - i. volume of waste and date(s) generated from treatment process;
 - ii. volume of waste disposed of on-site or shipped off-site;
 - iii. date(s) of disposal;
 - iv. identity of hauler or transporter;
 - v. location of disposal site; and
 - vi. method of final disposal.

The above records shall be maintained on a monthly basis. The records shall be retained at the facility site, or shall be readily available for review by authorized representatives of the TCEQ for at least five years.

- 12. For industrial facilities to which the requirements of 30 TAC Chapter 335 do not apply, sludge and solid wastes, including tank cleaning and contaminated solids for disposal, shall be disposed of in accordance with THSC Code Chapter 361.

OTHER REQUIREMENTS

1. The Executive Director has reviewed this action for consistency with the goals and policies of the Texas Coastal Management Program (CMP) in accordance with the regulations of the General Land Office (GLO) and has determined that the action is consistent with the applicable CMP goals and policies.
2. Violations of daily maximum limitations for the following pollutants shall be reported orally or by facsimile to TCEQ Region 12, within 24 hours from the time the permittee becomes aware of the violation, followed by a written report within five working days to TCEQ Region 12 and the Enforcement Division (MC 224):

<u>METALS</u>	<u>MAL (mg/L)</u>
Chromium (Total)	0.010
Chromium (6+)	0.010
Copper (Total)	0.010
Nickel (Total)	0.010
<u>DIOXINS/FURANS</u>	<u>MAL (picograms/L)</u>
2,3,7,8-TCDD	10
<u>VOLATILE COMPOUNDS</u>	<u>MAL (mg/L)</u>
Acrylonitrile	0.050
Benzene	0.010
Carbon Tetrachloride	0.010
Chlorobenzene	0.010
Chloroethane	0.050
Chloroform	0.010
1,1-Dichloroethane	0.010
1,2-Dichloroethane	0.010
1,1-Dichloroethylene	0.010
1,2-Dichloropropane	0.010
1,3-Dichloropropylene	0.010
Ethylbenzene	0.010
Methyl Chloride	0.050
Methylene Chloride	0.020
Tetrachloroethylene	0.010
Toluene	0.010
1,2-trans-Dichloroethylene	0.010
1,1,1-Trichloroethane	0.010
1,1,2-Trichloroethane	0.010
Trichloroethylene	0.010
Vinyl Chloride	0.010

<u>ACID COMPOUNDS</u>	<u>MAL (mg/L)</u>
2-Chlorophenol	0.010
2,4-Dichlorophenol	0.010
2,4-Dimethylphenol	0.010
4,6-Dinitro-o-Cresol	0.050
2,4-Dinitrophenol	0.050
2-Nitrophenol	0.020
4-Nitrophenol	0.050
Phenol	0.010
2,4,6-Trichlorophenol	0.010
<u>BASE/NEUTRALCOMPOUNDS</u>	<u>MAL (mg/L)</u>
Acenaphthene	0.010
Acenaphthylene	0.010
Anthracene	0.010
Benzo(a)anthracene	0.010
Benzo(a)pyrene	0.010
3,4-Benzofluoranthene	0.010
Benzo(k)fluoranthene	0.010
Bis(2-Ethylhexyl) Phthalate	0.010
Chrysene	0.010
1,2-Dichlorobenzene	0.010
1,3-Dichlorobenzene	0.010
1,4-Dichlorobenzene	0.010
Diethyl Phthalate	0.010
Dimethyl Phthalate	0.010
Di-n-Butyl Phthalate	0.010
2,4-Dinitrotoluene	0.010
2,6-Dinitrotoluene	0.010
Fluoranthene	0.010
Fluorene	0.010
Hexachlorobenzene	0.010
Hexachlorobutadiene	0.010
Hexachloroethane	0.020
Naphthalene	0.010
Nitrobenzene	0.010
Phenanthrene	0.010
Pyrene	0.010
1,2,4-Trichlorobenzene	0.010

Test methods utilized shall be sensitive enough to demonstrate compliance with the permit effluent limitations. Permit compliance/noncompliance determinations will be based on the effluent limitations contained in this permit with consideration given to the minimum analytical level (MAL) for the parameters specified above.

When an analysis of an effluent sample for any of the parameters listed above indicates no detectable levels above the MAL and the test method detection level is as sensitive as the specified MAL, a value of zero (0) shall be used for that measurement when determining calculations and reporting requirements for the self-reporting form. This applies to

determinations of daily maximum concentration, calculations of loading and daily averages, and other reportable results.

When a reported value is zero (o) based on this MAL provision, the permittee shall submit the following statement with the self-reporting form either as a separate attachment to the form or as a statement in the comments section of the form.

“The reported value(s) of zero (o) for [list parameter(s)] on the self-reporting form for [monitoring period date range] is based on the following conditions: 1) the analytical method used had a method detection level as sensitive as the MAL specified in the permit, and 2) the analytical results contained no detectable levels above the specified MAL.”

When an analysis of an effluent sample for a parameter indicates no detectable levels and the test method detection level is not as sensitive as the MAL specified in the permit, or an MAL is not specified in the permit for that parameter, the level of detection achieved shall be used for that measurement when determining calculations and reporting requirements for the self-reporting form. A zero (o) may not be used.

3. For continuous temperature measurements taken in accordance with Page 2e of this permit (Outfall 007), the reporting requirements in MONITORING AND REPORTING REQUIREMENTS, Item 7 may be omitted if the continuously recorded temperature does not exceed the Daily Maximum temperature for more than 30 minutes for any single exceedance and not more than a total of 7 hours and 26 minutes in any 31 day period.
4. The permittee shall maintain the pH within the ranges specified on Page 2h (Outfall 007). Excursions from the ranges are permitted. An excursion is an unintentioned and temporary incident in which the pH value of the wastewater exceeds the range set forth on Page 2h. A pH excursion is not a violation and a non-compliance report is not required for pH excursions provided:
 - A. The excursion does not exceed the range of 5-11 standard pH units,
 - B. The individual excursion does not exceed 60 minutes,
 - C. The sum of the excursions does not exceed 7 hours and 26 minutes in any 30 day period.
5. Monitoring results must be provided at the intervals specified in the permit. For pollutants which are monitored annually, effluent reports must be submitted in September of each year. For pollutants which are monitored twice per year, the first effluent report must be submitted six months after the date of permit issuance and subsequent reports every six months thereafter. For pollutants which are monitored four times per year, the first effluent report must be submitted three months after the date of permit issuance and subsequent reports every three months thereafter.
6. Mixing Zone Definitions:

Outfall 002: A volume within a radius of 30 feet from the point of discharge.
Outfall 003: A volume within a radius of 55 feet from the point of discharge.
Outfall 007: A volume within a radius of 200 feet from the point of discharge.

Chronic toxic criteria apply at the edge of the mixing zone.

7. Any initial results obtained using ASTM D6503-99 Enterolert™ method that are suspected to be influenced by non-enterococcus bacteria may be subjected to additional testing to confirm the enterococcus results prior to reporting. Initial enrichment of bacterial cultures and confirmation testing will be conducted following techniques described in Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998 (or later version thereof, American Public Health Association, Washington, DC, Method 9230 B (P. 9-76)). Confirmation testing shall be conducted on all wells which show a positive fluorescent response by the Enterolert™ method. Upon completion, the number of positive responses observed in the initial Enterolert™ testing shall be adjusted as necessary to reflect the confirmation testing results. The adjusted results will be used to determine the actual enterococcus value reported.
8. This permit does not provide authorization for the permittee to accept wastewaters from third party sources, neither does it prohibit acceptance of such wastewaters. This permit only provides the authorization to discharge these wastes. Should authorization to accept third party waste be required, it is the obligation of the permittee to obtain such authorization from the appropriate regulatory authority.
9. “Contaminated runoff” is runoff which comes into contact with any raw material, intermediate product, finished product, by-product, or waste product located on petroleum refinery property.

Discharge from internal Outfall 108 of contaminated runoff shall occur only when the SWIB has exceeded, or is projected to exceed, its storage capacity due to a large rainfall event, or multiple rainfall events, and the act of routing the contaminated runoff through the NET would cause an upset condition in the treatment unit.

10. The permittee shall notify Harris County Public Health and Environmental Services by phone at (713) 920-2831 at least 30 minutes before discharging stormwater via Outfall 108 between the hours of 8:00 am and 6:00 p.m. Monday through Friday. This notification requirement shall not apply during emergency conditions threatening or causing personal injury or property damage. This notification requirement shall expire 18 months from the date of permit issuance if the three most recent successive stormwater sampling events at Outfall 108 demonstrate compliance with applicable permit discharge limitations or, alternatively, as soon thereafter as three successive stormwater sampling events at Outfall 108 demonstrate compliance with applicable permit discharge limitations.
11. Stormwater/Contaminated Runoff Exemption Bypass Discharges:

Discharges from internal Outfall 108 are prohibited except that a stormwater/contaminated runoff exemption bypass discharge will be allowed when the following conditions are met. The operator of the facility has the burden of demonstrating to the TCEQ that the three conditions have been met.

- A. The facility is designed, constructed, and maintained such that when empty the stormwater management system can contain the maximum volume of stormwater/contaminated runoff resulting from a 10-year, 24-hour precipitation event. In computing the maximum volume of stormwater/contaminated runoff resulting from the 10-year, 24-hour precipitation event, the permittee must include the volume that would result from all areas contributing runoff to the Stormwater Impoundment Basin (SWIB). For this location, the 10-year, 24-hour precipitation event is defined as 8.5 inches (per the National Weather Service Atlas – May 1961).

- B. The operator shall take all reasonable steps to minimize the discharge from internal Outfall 108. Following any rainfall event(s), the facility will start emptying the SWIB to the North Effluent Treater (NET) as rapidly as practicable.
- C. The facility complies with the non-compliance notification requirements of 30 TAC §305.125(9) for each discharge day, if required. For monitoring and reporting purposes, a discharge day shall be defined as beginning at the time a discharge starts and continuing (either interrupted or uninterrupted) for a maximum of 24-hours. A discharge which continues, or commences again after this 24-hour period, will be considered to be the beginning of another discharge day.

12. Daily records of the water level in the SWIB shall be kept onsite for at least three years.

13. The term 'non process wastewater' includes condensate, heat exchanger back flush water, utility wastewater, and fire water.

14. DIOXIN EFFLUENT MONITORING REQUIREMENTS

The method of analysis of the final effluent for 2,3,7,8-tetrachloro-dibenzo-p-dioxin (2,3,7,8-TCDD) and 2,3,7,8-TCDD equivalents (TEQ) shall be in accordance with the analytical protocol in U.S. Environmental Protection Agency Method 1613: Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution, July 1989, or the most recent update thereof. The following "minimum levels" (ML) for 2,3,7,8 congeners shall be achieved. The minimum level is defined as the level at which the entire analytical system shall be given recognizable mass spectra and acceptable calibration points.

Dioxin Congener	ML (ppq)	Dibenzofuran Congener	ML (ppq)
2,3,7,8-TCDD	10	2,3,7,8-TCDF	10
1,2,3,7,8-PeCDD	50	1,2,3,7,8-PeCDF	50
		2,3,4,7,8-PeCDF	50
1,2,3,4,7,8-HxCDD	50	1,2,3,4,7,8-HxCDF	50
1,2,3,6,7,8-HxCDD	50	1,2,3,6,7,8-HxCDF	50
1,2,3,7,8,9-HxCDD	50	1,2,3,7,8,9-HxCDF	50
		2,3,4,6,7,8-HxCDF	50

Minimum Levels for TCDD/TCDF Congeners

15. The Dioxin/Furan Toxicity Equivalents (TEQ) for Outfall 007 shall be reported on Discharge Monitoring Reports (DMRs) using STORET Code 34675 (2,3,7,8-TCDD).

16. DIVERSION OF WASTEWATERS BETWEEN FACILITIES

The North Effluent Treater (NET) is the primary treatment system for treating refinery process wastewaters generated at this (petroleum refinery) facility and discharges via Outfall 007 of this permit (TPDES Permit No. WQ0000403000). The South Effluent Treater (SET) is the primary treatment system for treating process wastewaters generated at the petrochemical manufacturing facility and discharges via Outfalls 001/101/004 of TPDES Permit No. WQ0000402000.

It is acknowledged that during non-routine upset/emergency conditions, the wastewaters typically routed to the NET and discharged via Outfall 007 of this permit may be diverted to the SET for treatment and discharge via Outfalls 001/101/004 of TPDES Permit No. WQ0000402000. Under similar conditions, the wastewaters typically routed to the SET and

discharged via Outfalls 001/101/004 of TPDES Permit No. WQ0000402000, may be diverted to the NET for treatment and discharge via Outfall 007 of this permit.

The following requirements apply to the diversion of wastewaters between the NET and the SET.

- A. The permittee shall provide written notification to the TCEQ Region 12 office and the Enforcement Division (MC 224) prior to initiating diversion of categorical process wastewaters (i.e., wastewaters subject to EPA categorical guidelines 40 CFR Parts 414 or 419) between facilities. Written notification must include the following information:
- i. anticipated start date of wastewater diversion;
 - ii. reason(s) why the diversion is necessary; and
 - iii. anticipated duration of wastewater diversion.

Within 5 days after the conclusion of the wastewater diversion event, the permittee shall provide written notification to the TCEQ Region 12 office and the Enforcement Division (MC 224) of end date of the wastewater diversion event.

- B. The simultaneous discharge of categorical process wastewaters (i.e., wastewaters subject to EPA categorical guidelines 40 CFR Parts 414 or 419) via Outfall 007 shall not exceed a duration of 72 hours per diversion event when categorical process wastewaters are routed from NET to the adjacent facility (WQ0000402000) or when categorical process wastewaters are backed out of the adjacent facility and flow is being reestablished via Outfall 007 once the upset condition at NET has been corrected.

17. FIREWATER PUMP TESTS

The permittee shall comply with the following requirements when testing firewater pumps.

- A. The permittee shall maintain a logbook that must contain the following information:
- i. dates and locations of pump tests;
 - ii. duration of pump test; and
 - iii. estimated volume of water pumped during test(s).

The log book must be maintained on-site for a period of three (3) years and made available to TCEQ personnel upon request.

- B. The discharges from pump tests must not contain visible oil.

CHRONIC BIOMONITORING REQUIREMENTS: MARINE

The provisions of this Section apply to Outfall 007 for whole effluent toxicity (WET) testing.

1. Scope, Frequency and Methodology

- a. The permittee shall test the effluent for toxicity in accordance with the provisions below. Such testing will determine if an appropriately dilute effluent sample adversely affects the survival or growth of the test organisms.
- b. The permittee shall conduct the following toxicity tests utilizing the test organisms, procedures, and quality assurance requirements specified below and in accordance with "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, Third Edition" (EPA-821-R-02-014), or its most recent update:
 - 1) Chronic static renewal 7-day survival and growth test using the mysid shrimp (*Mysidopsis bahia*) (Method 1007.0). A minimum of eight replicates with five organisms per replicate shall be used in the control and in each dilution. This test shall be conducted once per quarter.
 - 2) Chronic static renewal 7-day larval survival and growth test using the inland silverside (*Menidia beryllina*) (Method 1006.0). A minimum of five replicates with eight organisms per replicate shall be used in the control and in each dilution. This test shall be conducted once per quarter.

The permittee must perform and report a valid test for each test species during the prescribed reporting period. An invalid test must be repeated during the same reporting period. An invalid test is herein defined as any test failing to satisfy the test acceptability criteria, procedures, and quality assurance requirements specified in the test methods and permit. All test results, valid or invalid, must be submitted as described below.

- c. The permittee shall use five effluent dilution concentrations and a control in each toxicity test. These additional effluent concentrations are 3%, 5%, 6%, 8%, and 11% effluent. The critical dilution, defined as 8% effluent, is the effluent concentration representative of the proportion of effluent in the receiving water during critical low flow or critical mixing conditions.
- d. This permit may be amended to require a WET limit, a Chemical-Specific (CS) limit, a Best Management Practice (BMP), or other appropriate actions to address toxicity. The permittee may be required to conduct a Toxicity Reduction Evaluation after multiple toxic events.
- e. Testing Frequency Reduction
 - 1) If none of the first four consecutive quarterly tests demonstrates significant toxicity, the permittee may submit this information in writing and, upon approval, reduce the testing frequency to once per six months for the invertebrate test species and once per year for the vertebrate test species.

- 2) If one or more of the first four consecutive quarterly tests demonstrates significant toxicity, the permittee shall continue quarterly testing for that species until the permit is reissued. If a testing frequency reduction had been previously granted and a subsequent test demonstrates significant toxicity, the permittee will resume a quarterly testing frequency for that species until the permit is reissued.

2. Required Toxicity Testing Conditions

- a. Test Acceptance - The permittee shall repeat any toxicity test, including the control and all effluent dilutions, which fails to meet any of the following criteria:
 - 1) a control mean survival of 80% or greater;
 - 2) a control mean dry weight of surviving mysid shrimp of 0.20 mg or greater;
 - 3) a control mean dry weight for surviving unpreserved inland silverside of 0.50 mg or greater and 0.43 mg or greater for surviving preserved inland silverside.
 - 4) a control Coefficient of Variation percent (CV%) between replicates of 40 or less in the growth and survival tests.
 - 5) a critical dilution CV% of 40 or less in the growth and survival endpoints for either growth and survival test. However, if statistically significant lethal or nonlethal effects are exhibited at the critical dilution, a CV% greater than 40 shall not invalidate the test.
 - 6) a Percent Minimum Significant Difference of 37 or less for mysid shrimp growth;
 - 7) a Percent Minimum Significant Difference of 28 or less for inland silverside growth.
- b. Statistical Interpretation
 - 1) For the mysid shrimp and the inland silverside larval survival and growth tests, the statistical analyses used to determine if there is a significant difference between the control and an effluent dilution shall be in accordance with the manual referenced above, or its most recent update.
 - 2) The permittee is responsible for reviewing test concentration-response relationships to ensure that calculated test-results are interpreted and reported correctly. The EPA manual, "Method Guidance and Recommendation for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)" (EPA 821-B-00-004), provides guidance on determining the validity of test results.
 - 3) If significant lethality is demonstrated (that is, there is a statistically significant difference in survival at the critical dilution when compared to the control), the conditions of test acceptability are met, and the survival of the test organisms are equal to or greater than 80% in the critical dilution and all dilutions below that, then the permittee shall report a survival No Observed Effect Concentration (NOEC) of not less than the critical dilution for the reporting requirements.

- 4) The NOEC is defined as the greatest effluent dilution at which no significant effect is demonstrated. The Lowest Observed Effect Concentration (LOEC) is defined as the lowest effluent dilution at which a significant effect is demonstrated. A significant effect is herein defined as a statistically significant difference between the survival, reproduction, or growth of the test organism(s) in a specified effluent dilution compared to the survival, reproduction, or growth of the test organism(s) in the control (0% effluent).
- 5) The use of NOECs and LOECs assumes either a monotonic (continuous) concentration-response relationship or a threshold model of the concentration-response relationship. For any test result that demonstrates a non-monotonic (non-continuous) response, the NOEC should be determined based on the guidance manual referenced in Item 2 above.
- 6) Pursuant to the responsibility assigned to the permittee in Part 2.b.2), test results that demonstrate a non-monotonic (non-continuous) concentration-response relationship may be submitted, prior to the due date, for technical review. The above-referenced guidance manual will be used when making a determination of test acceptability.
- 7) Staff will review test results for consistency with rules, procedures, and permit requirements.

c. Dilution Water

- 1) Dilution water used in the toxicity tests shall be the receiving water collected as close to the point of discharge as possible but unaffected by the discharge.
- 2) Where the receiving water proves unsatisfactory as a result of preexisting instream toxicity (i.e. fails to fulfill the test acceptance criteria of item 2.a.), the permittee may substitute synthetic dilution water for the receiving water in all subsequent tests provided the unacceptable receiving water test met the following stipulations:
 - a) a synthetic lab water control was performed (in addition to the receiving water control) which fulfilled the test acceptance requirements of item 2.a;
 - b) the test indicating receiving water toxicity was carried out to completion (i.e., 7 days);
 - c) the permittee submitted all test results indicating receiving water toxicity with the reports and information required in Part 3 of this Section.
- 3) The synthetic dilution water shall consist of a standard, reconstituted seawater. Upon approval, the permittee may substitute other dilution water with chemical and physical characteristics similar to that of the receiving water.

d. Samples and Composites

- 1) The permittee shall collect a minimum of three composite samples from Outfall 007. The second and third composite samples will be used for the renewal of the dilution concentrations for each toxicity test.
- 2) The permittee shall collect the composite samples such that the samples are representative of any periodic episode of chlorination, biocide usage, or other potentially toxic substance discharged on an intermittent basis.
- 3) The permittee shall initiate the toxicity tests within 36 hours after collection of the last portion of the first composite sample. The holding time for any subsequent composite sample shall not exceed 72 hours. Samples shall be maintained at a temperature of 0-6 degrees Centigrade during collection, shipping, and storage.
- 4) If Outfall 007 ceases discharging during the collection of effluent samples, the requirements for the minimum number of effluent samples, the minimum numbers of effluent portions, and the sample holding time, are waived during that sampling period. However, the permittee must have collected an effluent composite sample volume sufficient to complete the required toxicity tests with renewal of the effluent. When possible, the effluent samples used for the toxicity tests shall be collected on separate days if the discharge occurs over multiple days. The sample collection duration and the static renewal protocol associated with the abbreviated sample collection must be documented in the full report.

3. Reporting

All reports, tables, plans, summaries, and related correspondence required in any Part of this Section shall be submitted to the attention of the Standards Implementation Team (MC 150) of the Water Quality Division.

- a. The permittee shall prepare a full report of the results of all tests conducted in accordance with the manual referenced above, or its most recent update, for every valid and invalid toxicity test initiated whether carried to completion or not.
- b. The permittee shall routinely report the results of each biomonitoring test on the Table 1 forms provided with this permit.
 - 1) Annual biomonitoring test results are due on or before January 20th for biomonitoring conducted during the previous 12 month period.
 - 2) Semiannual biomonitoring test results are due on or before July 20th and January 20th for biomonitoring conducted during the previous 6 month period.
 - 3) Quarterly biomonitoring test results are due on or before April 20th, July 20th, October 20th, and January 20th, for biomonitoring conducted during the previous calendar quarter.
 - 4) Monthly biomonitoring test results are due on or before the 20th day of the month following sampling.

- c. Enter the following codes for the appropriate parameters for valid tests only:
- 1) For the mysid shrimp, Parameter TLP3E, enter a "1" if the NOEC for survival is less than the critical dilution; otherwise, enter a "0."
 - 2) For the mysid shrimp, Parameter TOP3E, report the NOEC for survival.
 - 3) For the mysid shrimp, Parameter TXP3E, report the LOEC for survival.
 - 4) For the mysid shrimp, Parameter TWP3E, enter a "1" if the NOEC for growth is less than the critical dilution; otherwise, enter a "0."
 - 5) For the mysid shrimp, Parameter TPP3E, report the NOEC for growth.
 - 6) For the mysid shrimp, Parameter TYP3E, report the LOEC for growth.
 - 7) For the inland silverside, Parameter TLP6B, enter a "1" if the NOEC for survival is less than the critical dilution; otherwise, enter a "0."
 - 8) For the inland silverside, Parameter TOP6B, report the NOEC for survival.
 - 9) For the inland silverside, Parameter TXP6B, report the LOEC for survival.
 - 10) For the inland silverside, Parameter TWP6B, enter a "1" if the NOEC for growth is less than the critical dilution; otherwise, enter a "0."
 - 11) For the inland silverside, Parameter TPP6B, report the NOEC for growth.
 - 12) For the inland silverside, Parameter TYP6B, report the LOEC for growth.
- d. Enter the following codes for retests only:
- 1) For retest number 1, Parameter 22415, enter a "1" if the NOEC for survival is less than the critical dilution; otherwise, enter a "0."
 - 2) For retest number 2, Parameter 22416, enter a "1" if the NOEC for survival is less than the critical dilution; otherwise, enter a "0."

4. Persistent Toxicity

The requirements of this Part apply only when a test demonstrates a significant effect at the critical dilution. A significant effect is defined as a statistically significant difference between a specified endpoint (survival or growth) of the test organism in a specified effluent dilution when compared to the specified endpoint of the test organism in the control. Significant lethality is defined as a statistically significant difference in survival at the critical dilution when compared to the survival of the test organism in the control. Significant sublethality is defined as a statistically significant difference in growth at the critical dilution when compared to the growth of the test organism in the control.

- a. The permittee shall conduct a total of 2 additional tests (retests) for any species that demonstrates a significant effect (lethal or sublethal) at the critical dilution. The two retests shall be conducted monthly during the next two consecutive months. The permittee shall not substitute either of the two retests in lieu of routine toxicity testing.

All reports shall be submitted within 20 days of test completion. Test completion is defined as the last day of the test.

- b. If the retests are performed due to a demonstration of significant lethality, and one or both of the two retests specified in item 4.a. demonstrates significant lethality, the permittee shall initiate the TRE requirements as specified in Part 5. The provisions of item 4.a. are suspended upon completion of the two retests and submittal of the TRE Action Plan and Schedule defined in Part 5.

If neither test demonstrates significant lethality and the permittee is testing under the reduced testing frequency provision of Part 1.e., the permittee shall return to a quarterly testing frequency for that species.

- c. If the two retests are performed due to a demonstration of significant sublethality, and one or both of the two retests specified in item 4.a. demonstrates significant lethality, the permittee shall again perform two retests as stipulated in item 4.a.
- d. If the two retests are performed due to a demonstration of significant sublethality, and neither test demonstrates significant lethality, the permittee shall continue testing at the quarterly frequency.
- e. Regardless of whether retesting for lethal or sublethal effects or a combination of the two, no more than one retest per month is required for a species.

5. Toxicity Reduction Evaluation

- a. Within 45 days of the retest that demonstrates significant lethality, or within 45 days of being so instructed due to multiple toxic events, the permittee shall submit a General Outline for initiating a Toxicity Reduction Evaluation (TRE). The outline shall include, but not be limited to, a description of project personnel, a schedule for obtaining consultants (if needed), a discussion of influent and effluent data available for review, a sampling and analytical schedule, and a proposed TRE initiation date.
- b. Within 90 days of the retest that demonstrates significant lethality, or within 90 days of being so instructed due to multiple toxic events, the permittee shall submit a TRE Action Plan and Schedule for conducting a TRE. The plan shall specify the approach and methodology to be used in performing the TRE. A TRE is a step-wise investigation combining toxicity testing with physical and chemical analysis to determine actions necessary to eliminate or reduce effluent toxicity to a level not effecting significant lethality at the critical dilution. The TRE Action Plan shall lead to the successful elimination of significant lethality for both test species defined in item 1.b. As a minimum, the TRE Action Plan shall include the following:
 - 1) Specific Activities - The TRE Action Plan shall specify the approach the permittee intends to utilize in conducting the TRE, including toxicity characterizations, identifications, confirmations, source evaluations, treatability studies, and alternative approaches. When conducting characterization analyses, the permittee shall perform multiple characterizations and follow the procedures specified in the document entitled, "Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures" (EPA/600/6-91/003), or alternate procedures. The permittee shall perform multiple identifications and follow the methods specified in the documents entitled, "Methods for Aquatic Toxicity Identification Evaluations, Phase II

Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity” (EPA/600/R-92/080) and “Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity” (EPA/600/R-92/081). All characterization, identification, and confirmation tests shall be conducted in an orderly and logical progression;

- 2) Sampling Plan - The TRE Action Plan should describe sampling locations, methods, holding times, chain of custody, and preservation techniques. The effluent sample volume collected for all tests shall be adequate to perform the toxicity characterization/ identification/ confirmation procedures, and chemical-specific analyses when the toxicity tests show significant lethality. Where the permittee has identified or suspects specific pollutant(s) and source(s) of effluent toxicity, the permittee shall conduct, concurrent with toxicity testing, chemical-specific analyses for the identified and suspected pollutant(s) and source(s) of effluent toxicity;
 - 3) Quality Assurance Plan - The TRE Action Plan should address record keeping and data evaluation, calibration and standardization, baseline tests, system blanks, controls, duplicates, spikes, toxicity persistence in the samples, randomization, reference toxicant control charts, as well as mechanisms to detect artifactual toxicity; and
 - 4) Project Organization - The TRE Action Plan should describe the project staff, project manager, consulting engineering services (where applicable), consulting analytical and toxicological services, etc.
- c. Within 30 days of submittal of the TRE Action Plan and Schedule, the permittee shall implement the TRE with due diligence.
- d. The permittee shall submit quarterly TRE Activities Reports concerning the progress of the TRE. The quarterly reports are due on or before April 20th, July 20th, October 20th, and January 20th. The report shall detail information regarding the TRE activities including:
- 1) results and interpretation of any chemical-specific analyses for the identified and suspected pollutant(s) performed during the quarter;
 - 2) results and interpretation of any characterization, identification, and confirmation tests performed during the quarter;
 - 3) any data and substantiating documentation which identifies the pollutant(s) and source(s) of effluent toxicity;
 - 4) results of any studies/evaluations concerning the treatability of the facility's effluent toxicity;
 - 5) any data which identifies effluent toxicity control mechanisms that will reduce effluent toxicity to the level necessary to meet no significant lethality at the critical dilution; and
 - 6) any changes to the initial TRE Plan and Schedule that are believed necessary as a result of the TRE findings.

Copies of the TRE Activities Report shall also be submitted to the U.S. EPA Region 6 office.

- e. During the TRE, the permittee shall perform, at a minimum, quarterly testing using the more sensitive species; testing for the less sensitive species shall continue at the frequency specified in Part 1.b.
- f. If the effluent ceases to effect significant lethality (herein as defined below) the permittee may end the TRE. A “cessation of lethality” is defined as no significant lethality for a period of 12 consecutive months with at least monthly testing. At the end of the 12 months, the permittee shall submit a statement of intent to cease the TRE and may then resume the testing frequency specified in Part 1.b. The permittee may only apply the “cessation of lethality” provision once.

This provision accommodates situations where operational errors and upsets, spills, or sampling errors triggered the TRE, in contrast to a situation where a single toxicant or group of toxicants cause lethality. This provision does not apply as a result of corrective actions taken by the permittee. “Corrective actions” are herein defined as proactive efforts which eliminate or reduce effluent toxicity. These include, but are not limited to, source reduction or elimination, improved housekeeping, changes in chemical usage, and modifications of influent streams and effluent treatment.

The permittee may only apply this cessation of lethality provision once. If the effluent again demonstrates significant lethality to the same species, the permit will be amended to add a WET limit with a compliance period, if appropriate. However, prior to the effective date of the WET limit, the permittee may apply for a permit amendment removing and replacing the WET limit with an alternate toxicity control measure by identifying and confirming the toxicant and an appropriate control measure.

- g. The permittee shall complete the TRE and submit a Final Report on the TRE Activities no later than 28 months from the last test day of the retest that confirmed significant lethal effects at the critical dilution. The permittee may petition the Executive Director (in writing) for an extension of the 28-month limit. However, to warrant an extension the permittee must have demonstrated due diligence in their pursuit of the TIE/TRE and must prove that circumstances beyond their control stalled the TIE/TRE. The report shall provide information pertaining to the specific control mechanism(s) selected that will, when implemented, result in reduction of effluent toxicity to no significant lethality at the critical dilution. The report will also provide a specific corrective action schedule for implementing the selected control mechanism(s). A copy of the TRE Final Report shall also be submitted to the U.S. EPA Region 6 office.
- h. Based upon the results of the TRE and proposed corrective actions, this permit may be amended to modify the biomonitoring requirements, where necessary, to require a compliance schedule for implementation of corrective actions, to specify a WET limit, to specify a BMP, and to specify CS limits.

TABLE 1 (SHEET 1 OF 4)

MYSID SHRIMP SURVIVAL AND GROWTH

Dates and Times No. 1 FROM: _____ Date Time TO: _____ Date Time
Composites
Collected No. 2 FROM: _____ TO: _____
No. 3 FROM: _____ TO: _____

Test initiated: _____ am/pm _____ date

Dilution water used: _____ Receiving water _____ Synthetic dilution water

MYSID SHRIMP SURVIVAL

Percent Effluent	Percent Survival in Replicate Chambers								Mean Percent Survival			CV%*
	A	B	C	D	E	F	G	H	24h	48h	7 day	
0%												
3%												
5%												
6%												
8%												
11%												

* Coefficient of Variation = standard deviation x 100/mean

DATA TABLE FOR GROWTH OF MYSID SHRIMP

Replicate	Mean dry weight in milligrams in replicate chambers					
	0%	3%	5%	6%	8%	11%
A						
B						
C						
D						
E						

TABLE 1 (SHEET 2 OF 4)

MYSID SHRIMP SURVIVAL AND GROWTH

DATA TABLE FOR GROWTH OF MYSID SHRIMP (Continued)

Replicate	Mean dry weight in milligrams in replicate chambers					
	0%	3%	5%	6%	8%	11%
F						
G						
H						
Mean Dry Weight (mg)						
CV%*						
PMSD						

1. Dunnett's Procedure or Steel's Many-One Rank Test or Wilcoxon Rank Sum Test (with Bonferroni adjustment) or t-test (with Bonferroni adjustment) as appropriate:

Is the mean survival at 7 days significantly less than the control survival for the % effluent corresponding to lethality?

CRITICAL DILUTION (8%): _____ YES _____ NO

2. Dunnett's Procedure or Steel's Many-One Rank Test or Wilcoxon Rank Sum Test (with Bonferroni adjustment) or t-test (with Bonferroni adjustment) as appropriate:

Is the mean dry weight (growth) at 7 days significantly less than the control's dry weight (growth) for the % effluent corresponding to non-lethal effects?

CRITICAL DILUTION (8%): _____ YES _____ NO

3. Enter percent effluent corresponding to each NOEC\LOEC below:

a.) NOEC survival = _____% effluent

b.) LOEC survival = _____% effluent

c.) NOEC growth = _____% effluent

d.) LOEC growth = _____% effluent

TABLE 1 (SHEET 3 OF 4)

INLAND SILVERSIDE MINNOW LARVAL SURVIVAL AND GROWTH TEST

Dates and Times No. 1 FROM: _____ Date Time TO: _____ Date Time
Composites
Collected No. 2 FROM: _____ TO: _____
No. 3 FROM: _____ TO: _____

Test initiated: _____ am/pm _____ date

Dilution water used: _____ Receiving water _____ Synthetic Dilution water

INLAND SILVERSIDE SURVIVAL

Percent Effluent	Percent Survival in Replicate Chambers					Mean Percent Survival			CV%*
	A	B	C	D	E	24h	48h	7 days	
0%									
3%									
5%									
6%									
8%									
11%									

* Coefficient of Variation = standard deviation x 100/mean

TABLE 1 (SHEET 4 OF 4)

INLAND SILVERSIDE LARVAL SURVIVAL AND GROWTH TEST

INLAND SILVERSIDE GROWTH

Percent Effluent	Average Dry Weight in milligrams in replicate chambers					Mean Dry Weight (mg)	CV%*
	A	B	C	D	E		
0%							
3%							
5%							
6%							
8%							
11%							
PMSD							

Weights are for: ____ preserved larvae, or ____ unpreserved larvae

1. Dunnett's Procedure or Steel's Many-One Rank Test or Wilcoxon Rank Sum Test (with Bonferroni adjustment) or t-test (with Bonferroni adjustment) as appropriate:

Is the mean survival at 7 days significantly less than the control survival for the % effluent corresponding to lethality?

CRITICAL DILUTION (8%): _____ YES _____ NO

2. Dunnett's Procedure or Steel's Many-One Rank Test or Wilcoxon Rank Sum Test (with Bonferroni adjustment) or t-test (with Bonferroni adjustment) as appropriate:

Is the mean dry weight (growth) at 7 days significantly less than the control's dry weight (growth) for the % effluent corresponding to non-lethal effects?

CRITICAL DILUTION (8%): _____ YES _____ NO

3. Enter percent effluent corresponding to each NOEC/LOEC below:

a.) NOEC survival = _____% effluent

b.) LOEC survival = _____% effluent

c.) NOEC growth = _____% effluent

d.) LOEC growth = _____% effluent

24-HOUR ACUTE BIOMONITORING REQUIREMENTS: MARINE

The provisions of this Section apply to Outfall 007 for whole effluent toxicity (WET) testing.

1. Scope, Frequency and Methodology

- a. The permittee shall test the effluent for lethality in accordance with the provisions in this Section. Such testing will determine compliance with the Surface Water Quality Standard, 307.6(e)(2)(B), of greater than 50% survival of the appropriate test organisms in 100% effluent for a 24-hour period.
- b. The toxicity tests specified shall be conducted once per six months. The permittee shall conduct the following toxicity tests utilizing the test organisms, procedures, and quality assurance requirements specified in this section of the permit and in accordance with "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition" (EPA-821-R-02-012), or its most recent update:
 - 1) Acute 24-hour static toxicity test using the mysid shrimp (*Mysidopsis bahia*). A minimum of five replicates with eight organisms per replicate shall be used in the control and in each dilution.
 - 2) Acute 24-hour static toxicity test using the inland silverside (*Menidia beryllina*). A minimum of five replicates with eight organisms per replicate shall be used in the control and in each dilution.

A valid test result must be submitted for each reporting period. The permittee must report, then repeat, an invalid test during the same reporting period. The repeat test shall include the control and all effluent dilutions and use the appropriate number of organisms and replicates, as specified above. An invalid test is herein defined as any test failing to satisfy the test acceptability criteria, procedures, and quality assurance requirements specified in the test methods and permit.

- c. In addition to an appropriate control, a 100% effluent concentration shall be used in the toxicity tests. Except as discussed in item 2.b., the control and dilution water shall consist of standard, synthetic, reconstituted seawater.
- d. This permit may be amended to require a Whole Effluent Toxicity (WET) limit, a Best Management Practice (BMP), a Chemical-Specific (CS) limit, additional toxicity testing, and other appropriate actions to address toxicity. The permittee may be required to conduct a Toxicity Reduction Evaluation after multiple toxic events.

2. Required Toxicity Testing Conditions

- a. Test Acceptance - The permittee shall repeat any toxicity test, including the control, if the control fails to meet a mean survival equal to or greater than 90%.
- b. Dilution Water - In accordance with item 1.c., the control and dilution water shall consist of a standard, synthetic, reconstituted seawater.
- c. Samples and Composites
 - 1) The permittee shall collect one composite sample from Outfall 007.

- 2) The permittee shall collect the composite samples such that the samples are representative of any periodic episode of chlorination, biocide usage, or other potentially toxic substance discharged on an intermittent basis.
- 3) The permittee shall initiate the toxicity tests within 36 hours after collection of the last portion of the composite sample. Samples shall be maintained at a temperature of 0-6 degrees Centigrade during collection, shipping, and storage.
- 4) If Outfall 007 ceases discharging during the collection of the effluent composite sample, the requirements for the minimum number of effluent portions are waived. However, the permittee must have collected a composite sample volume sufficient for completion of the required test. The abbreviated sample collection, duration, and methodology must be documented in the full report.

3. Reporting

All reports, tables, plans, summaries, and related correspondence required in any Part of this Section shall be submitted to the attention of the Standards Implementation Team (MC 150) of the Water Quality Division.

- a. The permittee shall prepare a full report of the results of all tests conducted in accordance with the manual referenced above, or its most recent update, for every valid and invalid toxicity test initiated.
- b. The permittee shall routinely report the results of each biomonitoring test on the Table 2 forms provided with this permit.
 - 1) Semiannual biomonitoring test results are due on or before January 20th and July 20th for biomonitoring conducted during the previous 6 month period.
 - 2) Quarterly biomonitoring test results are due on or before January 20th, April 20th, July 20th, and October 20th, for biomonitoring conducted during the previous calendar quarter.
- c. Enter the following codes for the appropriate parameters for valid tests only:
 - 1) For the mysid shrimp, Parameter TIE3E, enter a "0" if the mean survival at 24-hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter a "1."
 - 2) For the inland silverside, Parameter TIE6B, enter a "0" if the mean survival at 24-hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter a "1."
- d. Enter the following codes for retests only:
 - 1) For retest number 1, Parameter 22415, enter a "0" if the mean survival at 24-hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter "1."
 - 2) For retest number 2, Parameter 22416, enter a "0" if the mean survival at 24-hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter "1."

4. Persistent Mortality

The requirements of this Part apply when a toxicity test demonstrates significant lethality, here defined as a mean mortality of 50% or greater to organisms exposed to the 100% effluent concentration after 24-hours.

- a. The permittee shall conduct 2 additional tests (retests) for each species that demonstrates significant lethality. The two retests shall be conducted once per week for 2 weeks. Five effluent dilution concentrations in addition to an appropriate control shall be used in the retests. These additional effluent concentrations are 6%, 13%, 25%, 50% and 100% effluent. The first retest shall be conducted within 15 days of the laboratory determination of significant lethality. All test results shall be submitted within 20 days of test completion of the second retest. Test completion is defined as the 24th hour.
- b. If one or both of the two retests specified in item 4.a. demonstrates significant lethality, the permittee shall initiate the TRE requirements as specified in Part 5 of this Section.

5. Toxicity Reduction Evaluation

- a. Within 45 days of the retest that demonstrates significant lethality, the permittee shall submit a General Outline for initiating a Toxicity Reduction Evaluation (TRE). The outline shall include, but not be limited to, a description of project personnel, a schedule for obtaining consultants (if needed), a discussion of influent and effluent data available for review, a sampling and analytical schedule, and a proposed TRE initiation date.
- b. Within 90 days of the retest that demonstrates significant lethality, the permittee shall submit a TRE Action Plan and Schedule for conducting a TRE. The plan shall specify the approach and methodology to be used in performing the TRE. A TRE is a step-wise investigation combining toxicity testing with physical and chemical analysis to determine actions necessary to eliminate or reduce effluent toxicity to a level not effecting significant lethality at the critical dilution. The TRE Action Plan shall lead to the successful elimination of significant lethality for both test species defined in item 1.b. As a minimum, the TRE Action Plan shall include the following:
 - 1) Specific Activities - The TRE Action Plan shall specify the approach the permittee intends to utilize in conducting the TRE, including toxicity characterizations, identifications, confirmations, source evaluations, treatability studies, and alternative approaches. When conducting characterization analyses, the permittee shall perform multiple characterizations and follow the procedures specified in the document entitled, "Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures" (EPA/600/6-91/003), or alternate procedures. The permittee shall perform multiple identifications and follow the methods specified in the documents entitled, "Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/080) and "Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/081). All characterization, identification, and confirmation tests shall be conducted in an orderly and logical progression;

- 2) Sampling Plan - The TRE Action Plan should describe sampling locations, methods, holding times, chain of custody, and preservation techniques. The effluent sample volume collected for all tests shall be adequate to perform the toxicity characterization/ identification/ confirmation procedures, and chemical-specific analyses when the toxicity tests show significant lethality. Where the permittee has identified or suspects specific pollutant(s) and source(s) of effluent toxicity, the permittee shall conduct, concurrent with toxicity testing, chemical-specific analyses for the identified and suspected pollutant(s) and source(s) of effluent toxicity;
 - 3) Quality Assurance Plan - The TRE Action Plan should address record keeping and data evaluation, calibration and standardization, baseline tests, system blanks, controls, duplicates, spikes, toxicity persistence in the samples, randomization, reference toxicant control charts, as well as mechanisms to detect artifactual toxicity; and
 - 4) Project Organization - The TRE Action Plan should describe the project staff, project manager, consulting engineering services (where applicable), consulting analytical and toxicological services, etc.
- c. Within 30 days of submittal of the TRE Action Plan and Schedule, the permittee shall implement the TRE with due diligence.
- d. The permittee shall submit quarterly TRE Activities Reports concerning the progress of the TRE. The quarterly TRE Activities Reports are due on or before April 20th, July 20th, October 20th, and January 20th. The report shall detail information regarding the TRE activities including:
- 1) results and interpretation of any chemical-specific analyses for the identified and suspected pollutant(s) performed during the quarter;
 - 2) results and interpretation of any characterization, identification, and confirmation tests performed during the quarter;
 - 3) any data and substantiating documentation which identifies the pollutant(s) and source(s) of effluent toxicity;
 - 4) results of any studies/evaluations concerning the treatability of the facility's effluent toxicity;
 - 5) any data which identifies effluent toxicity control mechanisms that will reduce effluent toxicity to the level necessary to eliminate significant lethality; and
 - 6) any changes to the initial TRE Plan and Schedule that are believed necessary as a result of the TRE findings.
- Copies of the TRE Activities Report shall also be submitted to the U.S. EPA Region 6 office.
- e. During the TRE, the permittee shall perform, at a minimum, quarterly testing using the more sensitive species; testing for the less sensitive species shall continue at the frequency specified in Part 1.b.

- f. If the effluent ceases to effect significant lethality (herein as defined below) the permittee may end the TRE. A “cessation of lethality” is defined as no significant lethality for a period of 12 consecutive weeks with at least weekly testing. At the end of the 12 weeks, the permittee shall submit a statement of intent to cease the TRE and may then resume the testing frequency specified in Part 1.b. The permittee may only apply the “cessation of lethality” provision once.

This provision accommodates situations where operational errors and upsets, spills, or sampling errors triggered the TRE, in contrast to a situation where a single toxicant or group of toxicants cause lethality. This provision does not apply as a result of corrective actions taken by the permittee. “Corrective actions” are herein defined as proactive efforts which eliminate or reduce effluent toxicity. These include, but are not limited to, source reduction or elimination, improved housekeeping, changes in chemical usage, and modifications of influent streams and effluent treatment.

The permittee may only apply this cessation of lethality provision once. If the effluent again demonstrates significant lethality to the same species, the permit will be amended to add a WET limit with a compliance period, if appropriate. However, prior to the effective date of the WET limit, the permittee may apply for a permit amendment removing and replacing the WET limit with an alternate toxicity control measure by identifying and confirming the toxicant and an appropriate control measure.

- g. The permittee shall complete the TRE and submit a Final Report on the TRE Activities no later than 18 months from the last test day of the retest that demonstrates significant lethality. The permittee may petition the Executive Director (in writing) for an extension of the 18-month limit. However, to warrant an extension the permittee must have demonstrated due diligence in their pursuit of the TIE/TRE and must prove that circumstances beyond their control stalled the TIE/TRE. The report shall specify the control mechanism(s) that will, when implemented, reduce effluent toxicity as specified in item 5.g. The report will also specify a corrective action schedule for implementing the selected control mechanism(s). A copy of the TRE Final Report shall also be submitted to the U.S. EPA Region 6 office.
- h. Within 3 years of the last day of the test confirming toxicity, the permittee shall comply with 307.6(e)(2)(B), which requires greater than 50% survival of the test organism in 100% effluent at the end of 24-hours. The permittee may petition the Executive Director (in writing) for an extension of the 3-year limit. However, to warrant an extension the permittee must have demonstrated due diligence in their pursuit of the TIE/TRE and must prove that circumstances beyond their control stalled the TIE/TRE.

The requirement to comply with 307.6(e)(2)(B) may be exempted upon proof that toxicity is caused by an excess, imbalance, or deficiency of dissolved salts. This exemption excludes instances where individually toxic components (e.g. metals) form a salt compound. Following the exemption, the permit may be amended to include an ion-adjustment protocol, alternate species testing, or single species testing.

- i. Based upon the results of the TRE and proposed corrective actions, this permit may be amended to modify the biomonitoring requirements where necessary, to require a compliance schedule for implementation of corrective actions, to specify a WET limit, to specify a BMP, and to specify a CS limit.

TABLE 2 (SHEET 1 OF 2)
MYSID SHRIMP SURVIVAL

GENERAL INFORMATION

	Time	Date
Composite Sample Collected		
Test Initiated		

PERCENT SURVIVAL

Time	Rep	Percent effluent					
		0%	6%	13%	25%	50%	100%
24h	A						
	B						
	C						
	D						
	E						
	MEAN						

Enter percent effluent corresponding to the LC₅₀ below:

24 hour LC₅₀ = _____% effluent

TABLE 2 (SHEET 2 OF 2)

INLAND SILVERSIDE SURVIVAL

GENERAL INFORMATION

	Time	Date
Composite Sample Collected		
Test Initiated		

PERCENT SURVIVAL

Time	Rep	Percent effluent					
		0%	6%	13%	25%	50%	100%
24h	A						
	B						
	C						
	D						
	E						
	MEAN						

Enter percent effluent corresponding to the LC₅₀ below:

24 hour LC₅₀ = _____% effluent